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Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

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LOWE WATER GAS APPARATUS.

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OF

AIR AND STEAM SUPPLY

(PATENTED),

AFFORDING { **PERFECT CONTROL OF GENERATOR FIRE CONDITIONS.**

PRODUCING { **UNIFORM RESULTS. HIGHEST EFFICIENCIES.**

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Report of Committee on Progress in Carbonization Methods.[1]

[Presented at the Eighth Annual Meeting, American Gas Institute.]

After many years of more or less vacillating courtship the gas engineer has returned to his first love, and coal gas bids fair once more to rule supreme.

The interest in methods of carbonization has been slowly growing, and this year the smouldering fire was suddenly fanned into flame. Several factors have operated to bring this about. The increased price of gas oil, and the inability in some cases to even secure a supply of it, made serious inroads on the earnings of gas undertakings, and shook their very frame work. The question coal gas or water gas is no longer asked, and, in the words of Mr. R. B. Brown, the problem becomes "Coal Gas Surely; but How?"

Factors other than the high price of oil are operating in favor of coal gas. High, open-flame, candle power requirements have, with the advent of the mantle and the increased use of gas for heating, become of minor importance, and there is a rapidly growing feeling that candle power restrictions should be done away with and heating values substituted. The rapid increase in the cost of labor has led manufacturers of carbonizing apparatus to designs that increase the production per man, and approximate those obtainable in water gas practice. In the old days when it was cheaper to pay for labor than to pay interest on the increased capital necessity to do away with labor, there was no inducement to devise ways of decreasing the manual labor. That time has passed, and no gas engineer is alive to the situation to-day who neglects any opportunity to save manual labor or to make works' labor less arduous. The increase in the price of anthracite coal and the education of the public to the use of coke as fuel have bettered the domestic coke market; and while the price of gas coal has risen, it has not done so in proportion to the increase in the price of coke. Finally, improvements in design and material have produced carbonizing results which were deemed impossible only a few years ago; and, as a result of these factors, coal carbonization to-day is so important that the Technical Committee deemed it wise to appoint a special Committee on "Progress in Carbonization Methods."

Gas men to-day have to choose between the following systems of carbonization:

Horizontal retort, stop ends; throughs.
Inclined retort.
Vertical retort: Intermittent operation or continuous operation.
Coke oven.
Chamber or gas ovens.

All of these systems are actively in the field, and each has its advocates; all are capable of producing excellent results if properly operated, but one type is often better suited to meet certain conditions and fulfill the requirements.

Horizontal Retort System.—Recent progress in horizontal carbonizing plants has been largely in the use of silica material and improved charging and drawing apparatus for through retorts; through retorts being almost universally adopted in plants of any considerable size. Together with these changes are improvements of furnace design, bench mountings, pressure control and purification, and these changes have produced much better operating results and efficiencies than thought possible a few years ago, and have resulted in giving this system a new lease of life. The Gas Machinery Company (Cleveland, O.), has this to say:

"Coal gas benches, no matter how well designed or how good the workmanship, cannot be successful unless built of proper materials. The best firebrick and clay tile should be used in their proper places, and retorts and setting blocks around retorts and in generator arch should be of silica.

"Silica sectional retorts and settings have greater strength, durability and conductivity, and produce more gas, with less bench fuel and scurfing, than those of other refractory materials. The smaller plants have horizontal, stop-end retorts, operated entirely by hand; larger plants have horizontal, through retorts, charged in front by hand, but discharged by a hand-operated coke-pusher in front of the setting. The furnace is generally fired and cleaned in the rear of the setting to facilitate charging hot coke if desired. (See Fig. 1.)

"The coke pusher can be hung on an overhead track or run on rails level with the charging floor."

The Improved Equipment Company, of New York, reports that it is installing 4 benches of 8's—20 feet throughs—heated with one producer, for the Madison Gas and Electric Company, in which they are using silica retorts and settings. The retorts are 16 inches by 26 inches, and the shape is rectangular with heavy fillets in corners.

For the Salem (Mass.) Gas Light Company, 3 benches of 9's (20 feet throughs) with single producers. And has about finished an installation of 5 benches of 9's (21 feet throughs) for the United Gas Improvement Company, at the Point Breeze works, Philadelphia. In all these installations the American silica material is used.

The retort at Point Breeze is rather unusual in shape. (See Fig. 2.) Mr. Gartley is favorably inclined to this type of retort, feeling it is

1. Slightly abridged.—EDS.

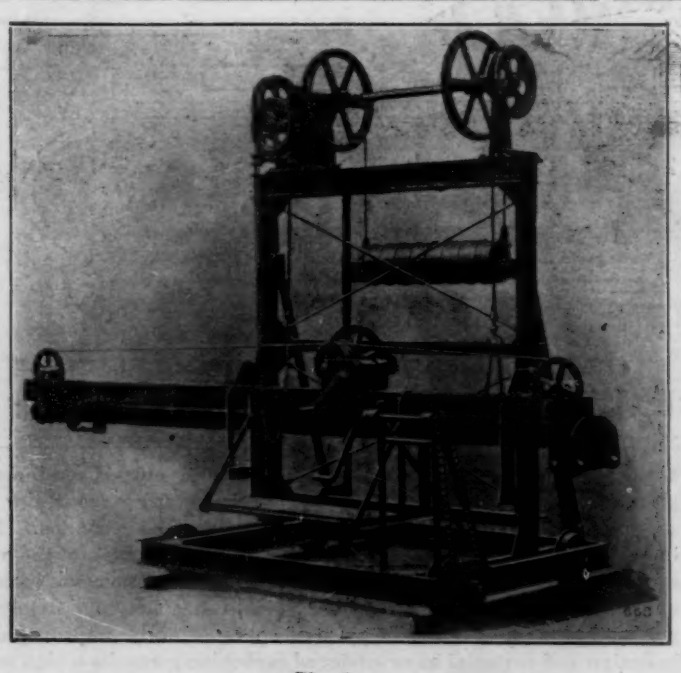

Fig. 1.

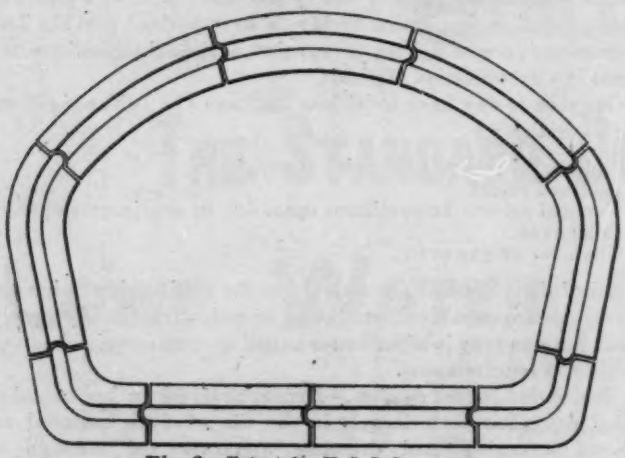

Fig. 2.—Retort for U. G. I. Company.

well suited for charging and drawing machines of the Fiddes-Aldridge type.

Report by Mr. H. A. Carpenter, on the Riter-Conley Manufacturing Company's Late Developments.—The square take-off pipe in the space formerly occupied by buckstays, and the connection of the individual retorts into this pipe from either side, has made possible the construction of retort settings of considerable height. Fig. 3 illustrates benches with retorts 6 in height and our standard setting is now 8 rows high. The vertical take-off pipe discharges gas either at the top or bottom or at both top and bottom, the system being covered by patents. No water seal is employed in the take-off mains—standard construction in large plants provides for a patented ball-and-socket shut-off valve at each mouthpiece; but the very sensitive system of control makes it possible for small plants to operate without shut-off valves.

Fig. 3.

A novel type of mouthpiece has been patented by this Company, for protecting the ground surfaces of the mouthpiece casting and lid, by means of springs which insure a uniform pressure at all times on these surfaces (Fig. 4).

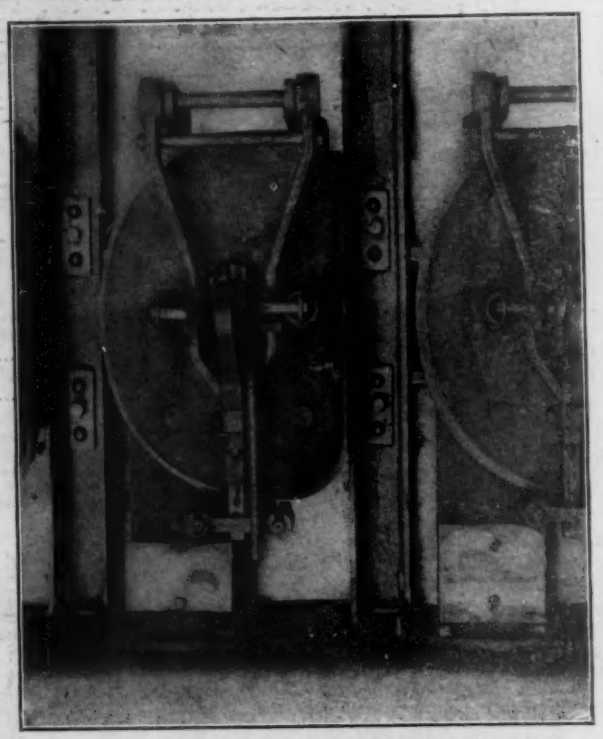

Fig. 4.

A very sensitive system of controlling the gas pressure from the retorts has been worked out by using turbo-exhausters. Recording gauges and control for gas, primary air, and waste gases are located at a convenient point on the operating floor.

Waste gases from the benches are utilized to make superheated steam for power purposes, and hot water for heating purposes.

Some 10 years ago this Company constructed the first retorts and settings of its celebrated Ricon material, practically pure silica. The use of this material has been very successful, a large number of sectional retorts and settings having been constructed. Its value can be judged from the fact that a complete stack of 10 benches of eights, 15-foot retorts, at Worcester, Mass., operated without repairs for 52 months, and each retort had a make to its credit of 25 million cubic feet, and the only repairs necessary were new tiles in the bottoms of the retorts.

"We have a new design of retort bench construction (Fig. 5) in which the shapes of refractory material of which the structure is composed enter not only into the formation of the superimposed retorts, but also the means heretofore employed to support such retorts or ovens.

"The charging and discharging machine (Fig. 6) is an all-around automatic development of the type of single-motion, scoop machine. The operator of the machine opens the retort to be charged, moves the machine in position and throws a single switch. The machine discharges and charges the retorts, returns the scoop to its initial position and measures off a charge of coal ready for next charge. He then moves the machine back and closes the retort. The machine can go through this operation in less than 30 seconds."

Notes on Progress Made in Horizontal Carbonization Plants Constructed by the Parker Russell Mining and Manufacturing Company in the Last Two Years.—By Mr. D. R. Russell.—"Among the features in horizontal bench construction are new types of stoking machines; sectional silica retorts; tamped silica settings; improved hot coke conveyors; improved McDonald-Mann coke quenching bins; shaking grates; improved methods of introducing steam under grates; waste heat boilers; CO_2 return; improved standpipe systems and other new attachments.

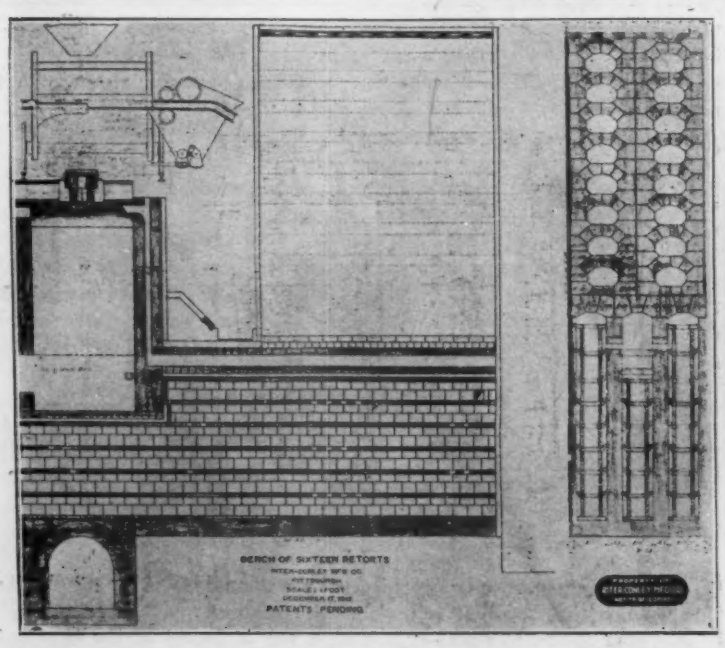

Fig. 5.

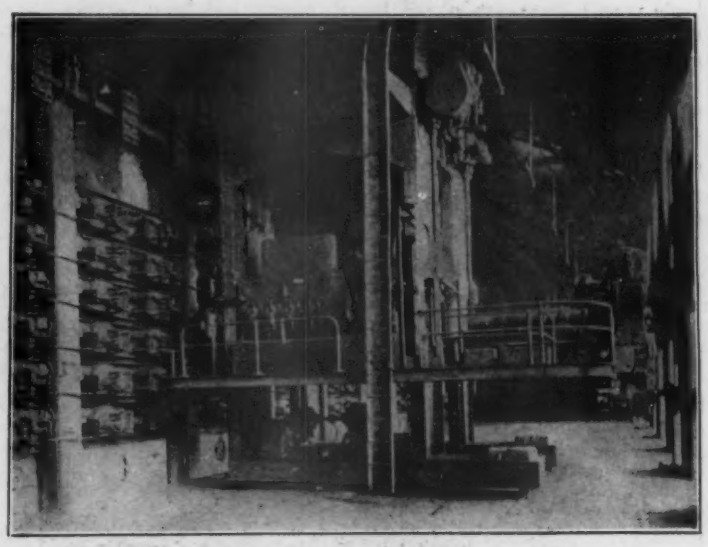

Fig. 6.

"Prior to 1912 the Atlanta (Ga.) Gas Light Company had a stack of 22 stop-end benches of 9's. In that year we received a contract to convert 12 benches into 6 through, 9's, with underground flues and an outside chimney. The old hydraulic mains were utilized, gas from 5 retorts being taken off on one side and from 4 on the other, each retort having one standpipe 8 inches in diameter. The retorts were of fireclay, supported by silica blocks. A Fiddes-Aldridge simultaneous discharging charger machine was installed, with continuous overhead bins, and Aldridge & Gibson patent automatic doors for feeding the machine. This plant has been working with good results for about a year, and the gas company decided to reconstruct the 10 remaining benches to 5 throughs, which will contain sectional silica retorts with fireclay heads.

"The Central Illinois Light Company, for its Peoria plant, contracted with us for a retort house, benches, Fiddes-Aldridge machine and coke handling apparatus. The retort house is of most economical construction, designed by our engineer, Mr. Vernon Baker. It consists of 'H' columns connected by beams, channels, etc. The roof on the discharging side is supported in part by the buckstays, the idea being to secure a well lighted and ventilated house at a minimum cost. (Fig. 7.) Above the top of the continuous coal bins, on both sides, the space was left open for ventilation and light. The floors and roof are of 'Hy-rib' concrete. Nine arches and benches of 8's, four tiers high, were installed, retorts 16 by 26½ inches, by 20 feet long, of clay, supported by moulded silica blocks and silica furnace arches. Each retort has one 8 inch standpipe, connected to the usual type of hydraulic main. At each end of the hydraulic main a tar and ammonia off-take system is arranged so that, by a quick-opening valve, operated from stage floor, a seal can be had in

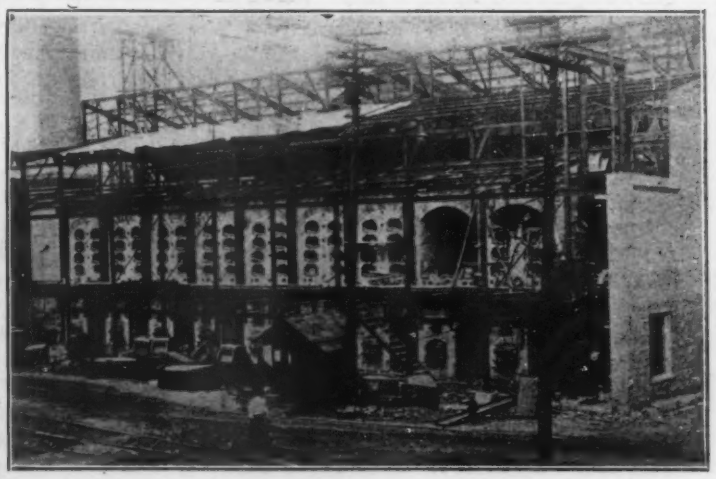

Fig. 7.—Peoria Plant.

the hydraulic while retorts are being charged, and the benches operated without seal after charging. This overflow is combined with the usual type of tar displacement system.

"A radial fireclay block chimney, of sufficient capacity to take care of an additional 9 benches, is at the end of the stack connected with underground flue. The benches have McDonald-Mann coke chutes, with water seal doors and water sprays specially designed for this plant. The coke from these bins is conveyed in steel lined wooden cars to a Craig Ridgway elevator at the end of the house, raised 24 feet and taken to the storage. A Fiddes Aldridge, simultaneous discharging-charger machine (Fig. 8), equipped with a measuring hop-

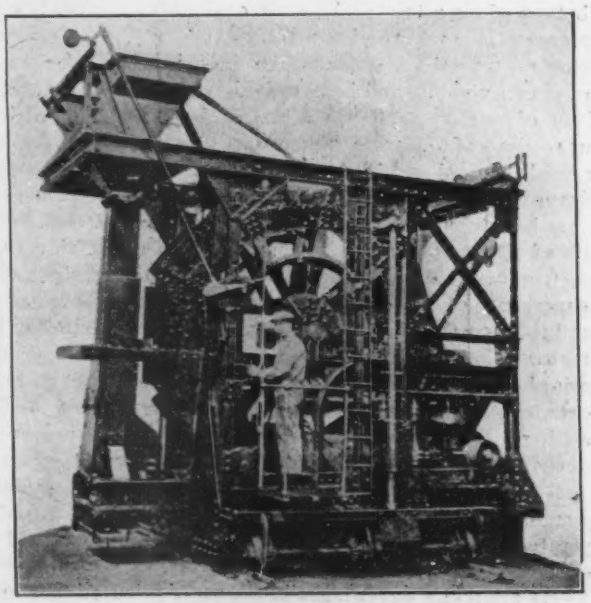

Fig. 8.—The Fides-Aldridge machine for the simultaneous charging and discharging of retorts.

per is installed, and a overhead continuous coal bin supplied with coal by crusher, bucket elevator and belt conveyor, the bottom of the bin having Aldridge & Gibson patent doors, operated by triggers on the measuring hopper. As the machine passes down the house the triggers engage with the doors and automatically open and close them, supplying the hopper with coal for one charge, an ideal arrangement for this type of machine.

"We also have a contract from the Grand Rapids (Mich.) Gas Light Company for 10 arches and benches of 8's similar to that of Peoria.

"We further have a contract from the Laclede Gas Light Co., of St. Louis, to install 2 stacks of 8 benches, each bench having 8 retorts, 4 tiers high. These retorts are of sectional silica blocks with fireclay heads, the supports of silica with silica furnace arches. The producers are placed 10 feet out on the discharging side, connected directly with each bench. The coke is handled with a DeBrouwer conveyor, between the face of the benches and the filling doors of the producers. Two Fiddes-Aldridge simultaneous discharging-charger machines, equipped with self-contained hoppers of 5 tons each, were supplied, the hoppers to be filled from a central bin, and a load of coal is taken down the house with the machine.

Either machine is of sufficient capacity to take care of the entire house, the other being reserve. The Fiddes-Aldridge simultaneous discharging-charger machine is one of the greatest improvements for horizontal benches and is constructed as follows:

"Steel members form the outer and inner frames. The former are mounted on wheels running on a track in floor and carry a fixed coal hopper (or an automatic weighing hopper, if preferred), receiving coal from bins overhead; also liftng pulleys and part of the traveling gear. The inner frame is divided into halves. The right-hand side carries the chain, chain-wheel and apron plate, and the left side the measure chamber, driver's platform, motor and controller, and the gear for the lifting, charging and traveling motions. The machine is equipped with an inclosed type, 13½ horse power motor, with a solenoid brake, and actuated by an ordinary tramway type controller; the current supplied by flexible cable or trolley. The lifting, traveling and discharging-charging gears are operated by a system of worm wheels, spur wheels and shafts with clutches, all under the control of the operator from his platform. The amount of coal charged is governed by a lever which regulates the number of pounds of coal per lineal foot of retort.

"The chain for emptying and filling the retort is formed of parallel plates held vertical by pivoted push plates near the upper side of the parallel plates. These are usually 2 feet to 3 feet apart, and are free to lift in one direction, but will not go beyond the vertical when chain is moving forward. Thus each plate pushes (not carries) a quantity of coal along the floor of the retort, and, on the backward stroke, the pushplates lift and pass over the top of the coal, assisting to level the charge. The front pushplate is of heavier construction and, during the operation of charging, it is pushing the coke out from the retort. As the chain rides on the coal there is no wear on the bottom of the retort, and as the coal keeps the chain cool, there is no appreciable wear on the machine.

Retorts.—"Sectional silica retorts have been used for a number of years at many points and have proven most satisfactory. There is a division of opinion as to their best design and construction, but it seems sections of moderate dimensions are preferable, and that fireclay heads be used extending back to the first row of supports.

Tamped Silica Settimgs.—"A unique feature in bench construction has been developed and patented by our Mr. Geo. W. Parker. Benches built at St. Louis, Kalamazoo, and Quincy, Ill., after being in use from six to thirteen months, proved to our entire satisfaction the superiority of the construction. No setting blocks are provided around the retorts. A mixture of ground silica including a binder is furnished, and wooden forms for each row of supports, and the material is tamped around the retorts as they are placed in the benches, similar to concrete work, the wooden forms being left in the setting. Expansion joints are provided at the proper places in this construction and, when heated up, the forms are incinerated and one solid mass of silica remains for each row of settings instead of numerous small pieces. The heat for drying out and raising the temperatures to the proper degree for charging, is utilized to burn the silica as is done in the kiln.

"There are many advantages in the use of this setting. No stock of special blocks need be carried by the manufacturer, therefore, shipments can be made on a moment's notice, and it has proven superior in strength and lasting quality. This construction is especially advantageous in refilling work, where the arch walls are frequently sprung, and it is difficult to make moulded blocks fit properly.

"A most interesting invention has been introduced by Mr. R. C. Congdon, Manager of the Atlanta Gas Light Company. He devised a scrubber standpipe (Fig. 9) consisting of a vertical pipe, preferably of steel, placed at the party wall between 2 benches, with connections from half the retorts in each bench; or, if preferred, pairs of pipes may be placed at each party wall. A valve is placed inside the standpipe at the connection to each retort, which standpipe is connected at the top to a water seal bridgepipe, which in turn is connected to a washbox in lieu of hydraulic main. At the lower end of the standpipe connection is made to a trough in the basement, the end of the connection being sealed in the liquor and tar. This trough connects with a tar well containing a liquor seal connection. The down-take pipe is equipped with a valve and the standpipe contains handholes for easy access. An overhead tank for weak liquor is placed at the end of the house, to supply, through pipe and funnels, each liquor-sealed bridgepipe. This liquor overflows into and down through the standpipe, taking with it the tar, etc., from the gas passng upward, and is carried off in the trough below.

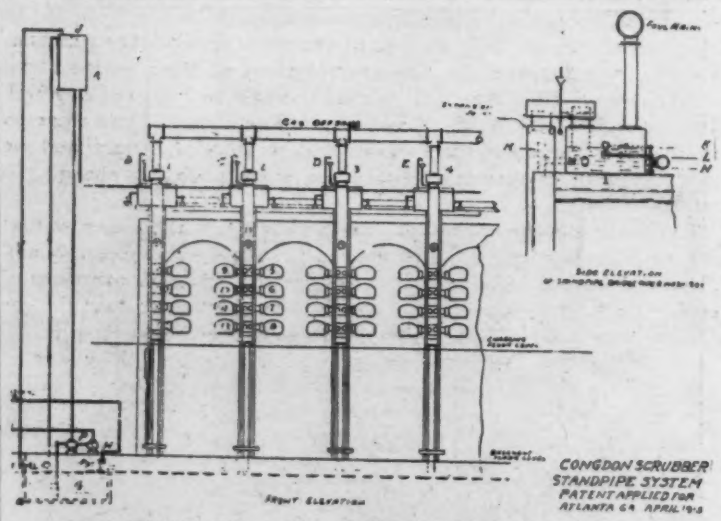

Fig. 9.—Diagram Congdon Scrubber Stand Pipe System.

"The apparatus can be operated, where the valves in the standpipes are used, with or without a seal in the washbox.

Inclined Retort System.—"Not so much is heard of the inclined system, but at least one company has had very marked success with this type. Here again the improvement has been largely brought about by the use of silica material and improvements in bench design and charging apparatus. The Gas Machinery Company, of Cleveland, says of this system:

"Still larger plants are furnished with inclined retorts charged and discharged by gravity. There being no shrinkage in silica under working conditions, the retorts keep their alignment. The coal and coke handling machinery is extremely simple and efficient, and benches of inclined retorts produce gas of maximum quality and quantity with a minimum of labor, generator fuel and expense."

"Fig. 10 gives a general view of an inclined retort installation under construction."

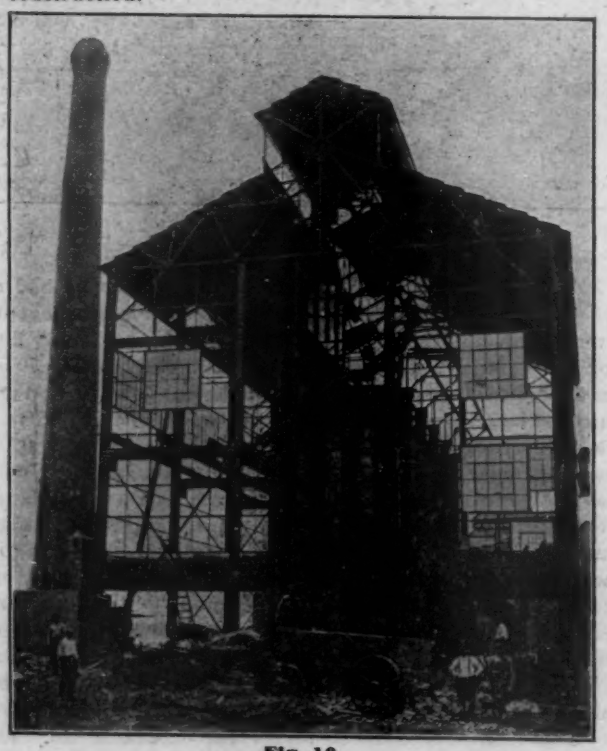

Fig. 10.

Vertical Retorts—Intermittent.—The present status of this system and the progress made since the first installation are indicated in the following report on the Dessau verticals at Providence, R. I., and the report of Mr. J. H. Taussig, of the United Gas Improvement Company, with plants operating at Manchester, N. H., and Philadelphia, and new plants building at Fall River, Mass., and Hartford, Conn.

The Dessau Vertical Retort System.—The first installation of Dessau benches in the United States, at Providence, R. I., was completed in 1910 and consisted of 18 benches, each containing 10 retorts.

These benches have now been in continuous operation and are still yielding good results.

In the spring of 1913 the fourth battery at Providence was commenced, which typifies the latest development of the Dessau system, and consists of 6 benches of 15 retorts, arranged in 5 rows of 3 retorts. The lower mouthpiece lids of each unit of 3 are mounted on a common shaft, which permits of discharging 3 retorts simultaneously, and the coal charging hopper is designed for simultaneously charging 3 retorts.

The lower mouthpiece lids are operated by hydraulic power, so that the work of discharging the retorts consists merely of the opening and closing of a cock. The take-off pipes on the upper mouthpieces of each row of 3 retorts are connected with one another, so that the gas from them enters the hydranlic main through a common dip-pipe.

By combining 3 retorts in one unit the duration of the charging operation is considerably decreased. The generators and recuperators are similar to those of the original design, with the exception that step-grate furnaces have been applied. Operating results show that temporary grate bars when clinkering the furnaces are unnecessary, thus minimizing the labor of clinkering and cleaning the fires.

(To be Continued.)

Gas Rates.

[Prepared for Eighth Meeting, American Gas Institute, by MR. ALTEN S. MILLER.]

A gas business, unlike a simple manufacturing enterprise, has a gross annual income of from 6 to 20 per cent. of the total value of the property used in the business, instead of 200 to 1,000 per cent. It is, therefore, more of an investment than a manufacturing business, although possessing features common to both.

In addition to the investment in the general plant used by all consumers, which includes the manufacturing plant, holders, mains, office, shops, etc., investments must be made for individual consumers in the form of meters and services. It is proper that each customer should pay his proportion if the interest, maintenance and operation of the general system, and the entire cost of the similar expenses are applicable to him individually. The expenses here referred to bear no relation to the amount of gas used, and should be paid regardless of the actual consumption of gas. In other words, those expenses which do not vary with the gas used should not be divided in that proportion, but in proportion to the service demanded by the individual. After these charges are paid, gas should be sold by meter registration, at actual cost, plus a fair manufacturing profit.

Ordinarily a gas manufacturing plant is designed to take care of the maximum day, and the annual output generally is from 250 to 275 times the output on the maximum day. The distributing system is designed for the maximum hour, and the annual output is from 2,000 to 2,200 times the maximum hour. If the output were uniform at all times, the manufacturing plant would make from 33 to 45 per cent. more gas duriug the year, the distribution system would handle four times as much during the year as it does under present conditions, and no holders would be necessary. Looked at from this point of view, it is easy to see that the investment varies with the demand during the maximum hour, in the case of the distributing system, and with the maximum day in the case of the plant and not with the annual output of gas.

Fifteen or 20 years ago the annual output was ordinarily 200 to 220 times the output on the maximum day, while to-day it is 250 to 275 times. The interest, therefore, on the cost of the plant and distributing system has not increased with the annual output. Likewise, the maintenance of the buildings, holders, yard connections, distributing system and many other items have not varied with the annual amount. There are other expenses, such as taxes, fire insurance, and the wages of watchmen, valve men, etc., which will not increase with the annual output, provided there is no increase in the maximum day or hour. To a certain extent this applies also to the salaries of superintendents, foremen, etc., and to the upkeep of the machinery.

The cost of reading meters, making bills, collecting, complaints, etc., is a function of the number of customers, not of the hourly, daily or annual output, or the size of the particular customer's installation; and this expense should be divided equally between the customers, regardless of their demand or consumption.

The costs that vary with the gas output include labor and material used in making gas, some of the repairs to gas making apparatus and machinery, drip pumping and a few other small items. There are certain administration expenses which can be divided between the various items in proportion to their amount. Briefly, the total expense of doing business, including the return on the investment, may be divided into 3 parts; the first varies with the demand; the second, with the number of customers; the third, with the volume of gas sold.

In order to apply this system it is necessary to know the relation between the amount of gas used by each customer during the hour of greatest consumption and the gas used by all during that hour. It is almost impossible to discover this relation with accuracy; but it is sufficient to use the capacity of the meter installed as the measure of the individual demand. While this is not necessarily the best measure, it is far more equitable than the system in general use, which provides for a uniform rate to all customers, or gives discounts for quantity only.

Each customer should be charged with his proportion of the interest on the investment in the general system, and of all the costs and expenses applicable to this system. This may be called the "demand cost." The customer should also be charged with the interest on the cost of, as well as with, all expenses applicable to this meter and service, and with his proportion of the costs that vary with the number of customers. We will call this the "customers' cost." After the customers' cost and the demand cost have been paid, the gas should be billed at manufacturing cost, plus a profit. We will call this the "running cost."

A system of rates made on a basis of the cost of performing the service is much fairer than any other system. At the present time probably one-third of the gas consumers in this country are carried at the expense of the other two-thirds, which is the worst kind of discrimination; and this, while the public service commission acts of all the States provide that there must be no discrimination. The above suggested system has been used for years by electric light and power companies, and those using it have almost invariably won out in competition with those companies using other systems of rates.

The public service commission and other rate-making bodies accustomed to dealing with electric rates should easily be convinced of the propriety of a system of gas rates based on the cost of performing the service. The difference in the rates of the two lines of business is in degree, not in kind. In the gas business the running charge is very much higher in proportion to the total expense, and in the electric certain kinds of service require less capital per unit of demand than others.

While human nature must always be reckoned with, it is not always possible to do things in a certain way because that way is the correct one. Shoppers are accustomed to making purchases amounting to only 5 or 10 cents, having the articles delivered to their residences regardless of the fact that the cost of delivery amounts to 7 or 8 cents. Likewise, there is a feeling it should not be necessary to pay for a privilege unless that privilege is used. It may not be good business, therefore, to insist upon a fixed monthly or annual payment in addition to the running charge. In order to get around the fixed payment, 2 rates might be charged for gas, as done in many cities for electric current. Each installation of a certain size would be charged at the higher rate until the quantity of gas used, multiplied by the difference between the running charge plus the manufacturing profit and the higher rate, equals the amount chargeable to the particular installation for customer and investment charges. All gas in excess should then be charged at cost plus the manufacturing profit. Certain operating and other difficulties are in the way of making one rate during a portion of the year and another during the balance. On the other hand, if a company divides by the amount of gas necessary to care for the annual charges, and apportions $\frac{1}{12}$ to each month, in many months a larger proportion of the customers will not use the $\frac{1}{12}$ part proportioned to them, so that in the year they will not pay their proportion of the demand and customer costs. The advantages of making the charges monthly are so great, in comparison with making them yearly, that the latter is not likely to be considered.

In practice this would work out about as follows: Assume a consumer with a 5-light meter and consumer and capital charges applicable to him of $21.60 per annum. Assume a charge of $1.50 per 1,000 cubic feet and a running cost of 50 cents. The difference between $1.50 and 50 cents, plus a manufacturing profit of 20 per cent., is 90 cents. Based on a surplus over running expense of 90 cents per 1,000, it will take 24,000 cubic feet of gas to reimburse the company for its cost of $21.60. This would be at the rate of 2,000 cubic feet per month, hence each month this customer would be billed for the gas

used, up to 2,000 cubic feet, at the rate of $1.50 per 1,000, and for all over 2,000 feet at the rate of 60 cents per 1,000.

The effect of such a rate, in the first place, would be to cut down the company's revenues. Many customers do not use their full quota of gas during some part of the year and others do not use their quota at all. When a company having a single rate is contemplating a reduction, it would be wise to provide for the second step instead of making a horizontal reduction. This lower rate will greatly stimulate business and will be a strong argument in favor of using cooking appliances the year round instead of summer only, as is the case with the majority of customers in colder climates. It is also probable that a low secondary rate will develop new users for gas.

In view of the lack of experience in this line, the possibility of an increase in the maximum daily and hourly sendout as the result of such a rate must not be ignored. Any change should be made slowly and after full consideration of all the surrounding conditions. But the principle is correct; and, if properly applied, will work out as well with gas as it does with electricity.

Protection of Street Mains by the Intelligent Use of Underground Space.

[Prepared for Eighth Meeting, American Gas Institute, by Mr. J. A. Gould.]

The laying and maintaining of street mains, in the congested districts of large cities, constitute one of the serious problems now confronting the distribution departments of gas companies. If the trouble were confined to the laying, it would be serious enough, yet would be endurable for the brief period when laying the main; but the maintenance of these pipes is with us day and night, winter and summer, and the responsibility increases with each additional main.

If we could eliminate the breaks and leaking joints, caused by interference with our pipes by the pipes, conduits and structures of other companies, the life of the men responsible for our maintenance would be much happier, and the maintenance expense more satisfactory to our directors than now.

The development of public utilities that must use the public streets has been so marked in recent years, that we may well sigh for old-time conditions, when there was only a sewer pipe in the center of the street, a water main 6 feet from the north curb, a gas main 6 feet from the south curb; and the rails of the horse cars in a few of the main streets. The sewer department now has a double system of sewers, one for house drainage the other for surface drainage. The water department has its ordinary distributing mains, a duplicate system of high pressure mains for fire service, and reinforcing feed mains.

The electric business has developed rapidly until there are now nearly a score of different varieties of wires buried in our streets, among which are found the following companies:

Street railway company's feed and return lines; the electric illuminating, the New England Telephone and Telegraph, Am. Telephone and Telegraph, Western Union Telegraph, Postal Telegraph, Telepost, fire alarm service, police signal service, Boston District Messenger, Automatic Fire Alarm, Electric Protective, Holmes Electric Protective, Mutual District Messenger, Stock Quotation Telegraph, and United Telegram.

Several of these larger interests, like the street railway, the lighting, the telephone and the telegraph companies, have separate conduits, while 9 of the companies using low voltage combine as the Low Tension Wire Association, and their wires are laid in a common conduit. These electric conduits may be of small cross-section, but as the manholes are built on too liberal a scale, they encroach upon the neighboring pipes and make serious complications. In addition to the electric conduits, we have the pipes of the heating company followed by those of the freezing companies. The pneumatic tubes for the mail service and parcel delivery are also troublesome neighbors, because exacting in their requirements as to line and grade.

The requirements of transportation have outgrown the capacity of the surface lines, and require either the elevated system with its large underground piers, or subways which tear up all existing gas pipes and most of the other structures. The city catch-basins, which occupy a portion of the sidewalk and about 3 feet of the roadway, still further reduce the available space; and in the business districts the practice of occupying the space under the sidewalks for vaults still further reduces the area available for pipes and conduits.

One very serious condition that confronts gas companies that are not municipal plants, is they have no permanent rights in their locations that the city or State is bound to respect, when the latter wants to do any work with which our pipes conflict. This was strongly brought out in the construction of a duplicate sewer system. When the storm sewers are built in streets where the old sewer is in the center of the street, with the water main on one side and the gas main on the other, the city naturally locates its new sewers not where they will disturb the municipal water pipe, but on the side of the gas main, with the result that much of the gas main must be relaid. This makes constant trouble and expense for the gas company. It is also unfortunate that most of this sewer work is let it small jobs to irresponsible contractors, who have no interest in properly supporting or backfilling their trenches, so the neighboring gas pipes have to suffer. This trouble from storm sewer building is avoided in new streets now being piped by not laying the gas mains until the sewer and water mains have been laid. The gas main is then located between the two, a good location for the gas pipe, if the sewer and water trenches have been carefully backfilled. Unfortunately hundreds of miles of older streets were built and piped before the city had adopted the duplicate system of sewers, accordingly there is trouble ahead for several years. The reciting of present conditions becomes a dreary tale of woe, and the important thing is to know how to improve matters in the future.

A long step towards avoiding these troubles would be made if it were possible to devise some wise system for assigning proper locations for all sub-surface structures in all new streets; but even if such a scheme were in force, serious trouble would probably develop unless these structures were laid in their proper sequence, so those laid shall not be undermined by subsequent work.

Under present methods space is wasted by one party taking more than necessary, and, by claiming unnecessary clearance for convenience, forcing other pipes into contracted areas. For instance, the parallel clearance demanded by different water departments ranges all the way, from 6 to 12 inches, in one city, to 5 feet in another.

Some have the unfortunate habit of locating their pipes halfway between existing pipes, with the result that the next fellow has the choice of 2 contracted locations and, whichever he chooses, he will crowd both his neighbors, whereas, if his predecessor had been wiser, there would have been room for all.

If some experienced, fair-minded official or board could have the power to determine just where all pipes and conduits shall be located, so that each structure could be given proper location, conditions would improve greatly. This official should be familiar with the laying and maintaining of such structures, so as to intelligently locate them for the best interests of all concerned, and should be free from all bias or prejudice. Such a position would be no sinecure and would require tact and horse sense to adjust conflicting interests and do justice to all.

In Boston, we have had a sample of the possibilities of this, one of the engineers of the Transit Commission being assigned the duty of supervising the relocating of all pipes and conduits over the new subways. This engineer had previous experience on telephone conduits and pneumatic tubes, but, best of all, the laying of gas mains, so his success was assured. The method now in force in Boston for obtaining a permit for a new main is as follows:

The engineer of distribution compiles a plan showing all existing structures in the street, and indicates the desired location of the new pipe. A blueprint is sent with the application to the office of the Commissioner of Public Works and the location is approved successively by division engineers of the sewer, water, grades and catch basins, and finally by the one in charge of highways, who indorses the application and the permit clerk issues the permit. This supervision is to protect municipal structures, regardless of its effect on the interests of other corporations.

Unless there is a thoroughly settled policy as to the locations to be given certain pipes, a change in the personnel of the departments may make radical changes. We have had executives in the street and park departments, who located gas mains in sidewalk in preference to the paved or macadam street, while their successors changed the policy and kept all the pipes in the roadway. Unless some settled policy is in force, it is impossible to intelligently locate outlets for branch streets when a new main is laid.

Every corporation or municipal department in a growing city is

sure to outgrow the capacity of its original pipes and conduits, and the locating with laying of reinforcing pipes is a serious problem. But above all other things, the problem of maintaining existing pipes in a safe condition is the most serious one for the gas company, and it is not always the last fellow in the street who has the worst of it. Everyone knows that an undermined cast iron pipe is liable to settle and either leak or break, and this is especially dangerous when a manhole is built so as to inclose or support the pipe, while the adjacent lengths are depending on soft earth for support. The pipes may be so covered or crowded by new structures that it is practically impossible to caulk the joints, and large bills may be incurred for damage to the electric cables by driving bars and picks when making necessary repairs.

From my investigations of conditions in some of the larger cities, I often find the solution of this problem is a local one, in that conditions vary.

As to the permanent right of the gas mains, it is conceded that a gas company has few that the city is bound to respect, and any gas lines which interfere with work of the city or State must be changed at the expense of the company. In many cities gas companies can collect from contractors on city work who damage their pipes, and in one city the gas company is recompensed by the city for moving its mains on account of subway construction. In a few cities the gas company is paid actual cost for moving its pipes, and occasionally a gas company bills the city for damages to gas pipes due to carelessness.

In some cities the locations are not assigned or approved, while in others such assignment or approval is made after plans are submitted by the gas company. In many cities there is a well established understanding as to the locations of the sewers and water and gas mains, while the location of the electric conduits is more a matter of chance.

The relative locations vary in different cities. In one large city the water main is in the center of the street, where most often we find the sewer. In another the center of the street is given to the gas main. This seems a most happy condition, unless the street is wide enough to require two lines, or the center of the street is occupied by car tracks. From this location services can be run to either side without blocking the street, or requiring the pipe to be laid in two sections.

In another important city the mains are laid between curbstone and line of street when practicable. Most gas men select a location in the roadway near the curb line, and if there are car tracks there should be two mains. The general manager of one company says, "Gas mains are given preference over water, sewer and conduit lines, owing to the necessity of obtaining grade for condensation." What a pity other communities are not equally enlightened as to the respect due a gas main! Philadelphia has as near a standard system of locations as any of the large cities and locations for underground structures are assigned by the Board of Highway Supervisors consisting of: Director of public works, and the chiefs of the highway, city property, survey and water bureaus.

These standard locations are generally followed: Gas, 3½ feet from curb; telephone, 5 feet from curb; sewer, 7 or 8 feet from curb; electric railroad conduit, close to either rail; water, in center of street.

Mr. Forstall states that this plan of standard locations often receives a setback, other than due to existing structures installed before the plan was inaugurated, owing to the fact that the 3 city bureaus which install underground structures lay pipes or conduits without consulting the Board of Highway Supervisors, and take any location they prefer. Thus any system will prove a failure if the city departments, responsible only to themselves, ignore its provisions. We could hardly conceive of a corporation being allowed to break up a system in that way.

The authorities of one very large city have recently attempted to establish a bureau of sub-surface structures, designed to locate and map all such so they will be able to assign proper locations for all sub-surface companies, insuring permanence and preventing interference with existing structures. This is the theory, but I am informed that, to the present time, about ¼ of 1 per cent. of the territory has been plotted, so we may confidently hope the grandchildren of the present generation may enjoy its benefits. A similar scheme was tried in Boston about 25 years ago, but, after the original sectional plans were made, there was no appropriation to keep them up-to-date and they soon became of little value, so now our plans must be compiled by collecting data from all known to have pipes in the street.

A gas company with which I was connected was required to file plans annually at city hall, showing locations of all gas mains laid; but I doubt if it was consulted by the departments, for whose benefit they were made, as the draughtsman came to the gas office to compile the location plans for water pipes and sewers.

It may be practical for some modern cities to start such a system and derive practical benefit from the data on file; but for an old city, where gas pipes have been laid annually since 1824, its systems of water pipes and sewers being entitled to the respect due old age, it is not an easy thing, without a large annual expenditure, and for this reason such schemes are apt to come to an untimely end.

The Technical Committee, in calling for a paper on this subject, realized it would not be practical to recommend a plan assigning specific locations for the various pipes and structures that could be generally adopted, but its value would be to remind the men in charge of street mains of the importance of foresight in locating pipes. This can be taken up in its most practical form by dealing with the local men who use or control the streets. It is fortunate that, as a rule, the relations between these parties are as friendly as can be expected, and it is the man who uses tact and consideration for others who succeeds best in the long run.

Boston is not renowned for the width and straightness of its streets, and congestion describes the existing conditions in its business section, as truly as in any city in the country, with perhaps one exception; a city that has been blessed in the past with competing electric light, telephone, telegraph and gas companies, with all that they imply. Most of this paper has been a recital of local woe, and its usefulness to others will be only as an incentive to do all in their power to prevent similar conditions in their cities.

The Percentage of Gas Used in Mantles and Heating Appliances.

[Prepared for Eighth Meeting, American Gas Institute, by Mr. C. H. Stone.]

In the regulations which are being considered to-day by State and municipal authorities for the control of the quality of illuminating gas, calorific value is given prominent place, and candle power requirements are either omitted or considered of secondary importance. This action rests on the belief that by far the larger part of gas used at present is burned in appliances which demand, for their successful operation, a satisfactory heating value of the gas, and that alone. A candle power requirement clearly affects only those customers using open flame burners, since thus far no definite relation has been discovered between candle power and calorific value; and, indeed, it seems an established fact that no such relation exists. In the report of the New York State gas companies to the Public Service Commission, the average per cent. of gas used in such a manner that heating value only is concerned is given as 81; these percentages were, however, in every case based on estimates, not on actual figures. Since gas engineers are almost unanimous in advocating a single standard, and since perhaps the most forceful argument in favor of their position is that a photometric standard protects the few at the expense of the many, it becomes a matter of very considerable importance to secure reliable data on the volume of gas used in such a way that its calorific value alone is important.

In order to answer this question, an investigation was undertaken by the writer in the city of Middletown, N. Y. The plan was to have an employee call upon every customer of the gas company, who, upon slips prepared for the purpose, was to enter the number, kind and size of burners in each and every room separately, as well as the make, size, etc., of every gas stove, water heater, radiator, iron or other appliance using gas.

Lest it be thought that such work was a heavy and unnecessary expense, let it be stated that it proved one of the most fruitful ventures and the best advertising medium employed in that city for years. The employee did not enter a house as one seeking information. His instructions were to adjust every burner that needed attention; to note any complaints (save as to the size of bills); to give advice when so requested; to instruct in the most economical methods of cooking and lighting, and to report to the office any needed repairs or adjustments that would require more of his time than could be spared for such work. The result of this canvass, from the Company's standpoint, was threefold. First; it created a most friendly feeling among a large number of consumers, who now think, and so express themselves, that the Company is really trying to give them

(*Continued on page* 410.)

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NEW YORK, MONDAY, DECEMBER 29, 1913.

BRIEFLY TOLD.

MORE PROGRESS.—The December meeting of the Progress Club, of the Brooklyn (N. Y.) Union Gas Company, was held Friday, the 19th inst., in the lecture hall of the Y. M. C. A. building. The addresses for the evening were: "Construction Work in a Large Gas Company," by Mr. L. S. Stiles, Superintendent of Construction; and "The Distribution of Gas and Control of Pressure," by Mr. J. H. Braine, Superintendent of Distribution. Mr. Stiles described and showed views of the principal construction and reconstruction done on the Company's plants during the last 6 years. One of the most interesting pieces of work handled by him and his department was the building of the first 10-million holder erected in this country, of which he showed a series of views connected with the various steps in its erection. Previous to the talk by Mr. Stiles, and between his speech and that of Mr. Braine, a fine musical entertainment was contributed by men from the Flatbush branch, who showed commendable versatility. Mr. Braine accurately and nicely described and illustrated the storage and distribution systems; how the gas is pumped from the different works into the belt line main, and delivered into the holders or through reducing governors into the distribution mains; also, how the pressures on all those mains were regulated and recorded. Both these talks were interestingly given, and thoroughly appreciated by the large audience present, which included invited guests from the New York and Queens Gas Company, whose employees have recently formed a Progress Club, with headquarters in Flushing. Next month's meeting in Brooklyn will be devoted to talks on department work by the heads of the various divisions.

LIGHT AND HEATING.—Mr. Sidney Mason, President of the Welsbach Company, has just made an announcement of world-wide interest and value, in the declaration that Dr. Harlan S. Miner, Chief Chemist of the Company, in treating the monazite ores from which they obtain the thorium used in Welsbach mantles, has isolated mesothorium, a mineral salt having some radio-active properties. They expect within the next year to produce at least 1,000 milligrams of mesothorium, and Dr. Miner's researches abroad indicate that its curative value, practically the same as that of radium, will be of inestimable worth in the treatment of cancerous complaints.

EDUCATING THE PUBLIC AS TO THE PROPER USE OF LIGHT.—At the International Exposition of Sanity and Sanitation, just held in this city, the Illuminating Engineering Society had an exhibit of miniature booths and pictures, showing good and bad lighting effects, and how both of them could be modified by altered surroundings. The exhibit was an excellent (as one well conversant with it remarks) example of how some of the ordinary facts of science may be made both interesting and instructive to non-technical people. Thousands of those who saw it were manifestly impressed. They knew that light, particularly artificial light, was one of their immediate necessities; but most had a vague idea just how such a common, everyday thing could affect their health and happiness. That it may be employed to prevent industrial accidents, and to promote industrial efficiency, that it may effect strange and sometimes comic distortions of statuary and other objects of interiors, not to mention a host of other possibilities, were probably known to scarcely any. Good and bad examples were shown side-by-side, and the qualifying conditions were clearly exposed. Stress was laid upon the fact that good lighting may be had in most cases at a cost not much (if any) greater than that paid for the bad, and that in not a few instances it could be obtained for even less. It made evident that lighting may be good, bad, or indifferent, depending largely upon the care and skill with which it is planned, and how it is used. The complete exhibit is to be permanently placed in the American Museum of Safety, 29 West 39th street, New York.

CURRENT MENTION.—

MR. HENRY S. THOMPSON, Commissioner of Water, Gas and Electricity, New York city, was the guest of honor at a beefsteak dinner, served in Healy's restaurant, Columbus avenue and 65th street, the evening of last Monday. His hosts were the deputy Commissioners of the Department, and the work of both hosts and Healy could only be praised. The guests included Mayor Kline, Mayor-elect Mitchel, Corporation Counsel Watson, Robert Adamson and many other notables.

MR. PAUL FESOLI, of Glens Falls, N. Y., has been appointed Manager of the Granville (N. Y.) Electric Light and Power Company, vice Mr. F. E. Smith, resigned.

THE Attleboro (Mass.) Gas Light Company this year distributed 150 bushels of coke to the deserving poor of that settlement during Christmas week.

THE complainants (S. E. Hancock and Myra Hancock), in a suit for damages brought by them against the Utah Gas and Coke Company, of Salt Lake City, and for an order compelling the Company to close its plant in the western part of the city, will not very much relish the decision in a like case recently determined in Fargo, N. D. The main points in the latter will be found in the JOURNAL for last week.

WITH the opening of the new year a number of changes in the sales' forces of the H. Mueller Manufacturing Company will become operative. Mr. E. A. Stebbins, who has been travelling in Nebraska, has retired from the service of the Company and will be succeeded by Mr. Harry Eggleston, formerly with the United States Radiator Corporation. Mr. Horace F. Clark has also retired from the Mueller staff, and will be succeeded by Mr. L. M. Rose, in the State of Iowa. Mr. E. G. Ince, whose field was in Minnesota, leaves the Company's service, and his successor is Mr. E. F. Kennedy, formerly with the Standard Manufacturing Company, of Pittsburgh, Pa. Mr. D. J. Mueller will be succeeded in the Texas district by Mr. C. H. Dubois—the latter has had for his field the Illinois territory. Mr. E. L. Moore, who is in every sense a "Mueller Product," will travel in Illinois. He has made trips, and in these "travels" has "shown-up" well. He was for many years in the responsible position of shipping clerk for this huge corporation, so it is almost needless to say that he is well acquainted with the Company's goods. Mr. Dubois, in fact, has made one trip in Texas since taking leave of the Illinois territory. The new appointees have been in the Mueller factory for several weeks, acquainting themselves with the Company's goods and its method of doing business. Of course, they are all experienced salesmen. The annual school of instruction for all the Mueller salesmen begins to-day, and ends with the annual banquet of "The 49 Club," the evening of January 3d. All the Mueller salesmen were booked to arrive yesterday in Decatur for the named event.

A LEAFLET from the Chicago headquarters of Messrs. H. M. Byllesby & Co., under date of the 23d inst., informs us that the combined connected load reports of the Standard Gas and Electric Company subsidiaries, show a total of 213,852 customers, including gas, electric, steam heating, water and telephone subscribers, represent-

ing a gain of 11 per cent. over the total number of customers a twelve-month ago. What is more to the point, the increase in connected load is even greater than the increase in customers. The gross lighting load on the date named was 147,478 kilowatts, an increase of 18 per cent., and the total connected load for all purposes was 253,237 kilowatts, showing an increase of 20 per cent. over the similar return made to October 31, 1912. The combined connected load of all Bylesby properties shows substantially a like ratio of increase.

MR. F. U. GATES, Manager, the Pocatello (Idaho) Gas and Power Company, has been authorized to notify the residents that, commencing January first, a minimum monthly charge of 50 cents per meter in service will rule. Meters will be set and removed without charge, and a deposit of "at least $3 is required from those on the lines who are not property owners."

THE Mount Vernon (Ills.) City Council has sanctioned a 25-year extension of the charter of the Citizens Gas, Electric and Heating Company, of Mount Vernon. The old charter under which the Company has been operuting still has 15 years to run.

MR. ARCHA W. COLT, since 1902 actively in service in the accounting division of the Norwich (Conn.) Municipal Gas and Electrical Department, recently tendered his resignation, to become effective the first prox. Mr. Colt's first service in these lines was when he became Assistant Cashier, Mr. A. J. Campbell being at that time the Company's Manager. When the municipality purchased the plant in 1904, Mr. Colt was appointed clerk and cashier, and his record is one of exceptional success. His successor has not been named.

ACCORDING to current news plans have been perfected for the consolidating of three of the H. L. Doherty & Company holding concerns. The Cities Service will acquire the entire assets of the Utilities Improvement Company and the Consolidated Cities Light, Power and Traction Company. The transaction is to be carried through an exchange of stock, the shares of the Utilities to be exchanged at evens for Cities preferred. For each 2 shares of Utilities common one share of Cities Service; for each 2 of Consolidated Cities common, one of Cities Service, common. The 5's of Consolidated Cities will remain outstanding. Under the new plan the Cities Service will have $27,368,426 preferred and $15,718,380 common. It will have about 70 operating companies serving a total population of about two million, with gross annual revenues of $17,000,000.

AT a special town meeting of the citizens of Arlington, Mass., it was desided to uphold the action of the Selectmen in issuing a permit to the Arlington Gas Light Company enabling it to construct a water gas plant on premises on Grove street, near the Symes Hospital. Certain residents opposed this permit, amongst the objectors being Mr. James P. Donnelly, who declared that the operation of such a plant would be inimical to the health of those living nearby. Mr. Philip A. Hendrick declared, however, that this could only be determined later by the Board of Health, which body had full power to abate any nuisance.

MR. CHARLES HOSLEY, in the employ of the New Haven (Conn.) Gas Company, has resigned from its staff, to accept the position of Circulation Manager, the New Haven *Register*.

THE Peoples Gas Light and Coke Company, Chicago, has rejected bids by various local banks for $2,500,000 new bonds, on the ground that the bids were so low as to suggest combination.

Correspondence.

[The JOURNAL is not responsible for the opinions expressed by correspondents.]

Mr. C. W. Hare Seems to Make a Personal Matter Out of Mr. Cohn's Objections.

C. W. HARE, 1401 Arch street, Philadelphia, Pa.,
December 22, 1913.

To the Editors, AMERICAN GAS LIGHT JOURNAL: I am very much surprised to read, in your issue of December 22d, the remarks of Mr. C. M. Cohn, on national advertising, made at the recent meeting of the National Commercial Gas Association, in view of the fact that he was a member of the Committee to revise the "Proceedings" of the recent convention, with the understanding that no part of the "Proceedings" would be published until such a revision had taken place.

This has been the custom of the Association since its inception, and that the First Vice-President of the Association, and a member of the Committee on Revision, should release his own remarks on one of the many important subjects covered at the meeting of the Association, remarks naturally covering only one side of the question, and not including any of the remarks made by the other gentlemen who took part in the general discussion, is one of the grossest breaches, not only of etiquette but of official duties, that has yet come to my attention in Association work, or any other work.

Had this statement not been made part of the "Proceedings" of the National Commercial Gas Association convention it could, most properly, have appeared at any time in your JOURNAL; but, being a part of the "Proceedings" of the convention, it had no place in your JOURNAL, nor in any other journal, unless accompanied by the discussion of the entire subject, as it took place on the floor of the convention hall; and I am convinced that, had you realized that Mr. Cohn's remarks were a part of the general "Proceedings" of the Association, that you would not have published them until such time as the entire proceedings were available.

I will not at this time take up Mr. Cohn's remarks in regard to national advertising, as, when the discussion which took place is printed in due course, it will be seen how inaccurate some of his statements are, except to state that the proposition of national advertising has been enthusiastically endorsed by the Association in all of its aspects, and has the support of many of the leading men of the gas industry, the following gentlemen endorsing it in their Public Policy Report presented to the Convention.

Mr. George B. Cortelyou, President, the Consolidated Gas Company, New York.

Mr. Emerson McMillin, Chairman of the Board, The American Light and Traction Company.

Mr. J. L. Richards, President and General Manager, The Boston Consolidated Gas Company.

Mr. Henry L. Doherty, President, Henry L. Doherty and Company.

Mr. Thomas N. McCarter, President, The Public Service Gas Company, of New Jersey.

Mr. Randal Morgan, Vice-President, The United Gas Improvement Company.

A word in regard to Mr. Cohn's connection with the National Commercial Gas Association, which you state has been prominent and pronounced, "In fact no other member thereof has been more active in its advancing and its support than Mr. Cohn."

As past-President of the Association I am qualified to state that Mr. Cohn took no part whatever in the work of the Association during the year 1913, other than to attend occasional meetings of Directors, and also to attend the annual convention.

As you know, associations do not live because of their annual conventions, but because of the work which is carried on by the various committees during the year, which makes the convention possible and makes the work of the Association throughout the year of real value to the industry. No one, therefore, who refuses to bear his share of this work can be considered as an active, or even a valuable, member of the National Commercial Gas Association.

Shortly after the Atlanta convention in 1912, at which convention Mr. Cohn was elected First Vice-President of the National Commercial Gas Association, I appointed him Chairman of the Committee on Accounting.

He telegraphed me that he felt obliged to decline owing to his numerous business duties. I then wrote him that I found he was a member of the Commercial Committee of the American Gas Institute, a Committee appointed for the first time to deal exclusively with commercial subjects, and a committee which had not been re-appointed this year.

I asked him if he intended to serve on that Committee. He replied to me that it was his intention to serve on the Commercial Committee of the American Gas Institute.

I leave it to the judgment of your readers whether or not the First Vice-President of the National Commercial Gas Association, in declining work on one of the Committees of the National Commercial Gas Association and accepting work on a Commercial Committee of the American Gas Institute, showed any great desire to aid in the work of the National Commercial Gas Association.

I trust that you will give this letter the same prominence that you have accorded to Mr. Cohn's communication.

Yours very truly, C. W. HARE.

(Continued from page 407.)

the best possible service. Second; it started the use of a large number of burners and appliances temporarily laid aside because they did not give satisfaction, and has greatly lessened the work of the complaint department. Third; it furnished the company with a full list of those who need ranges, heaters, burners, etc., so that the salesman could approach the proper parties with full certainty that they *ought* to want a range or water heater, whether so or not.

The slips thus secured were studied one-by-one, and an entry made on a large table, which showed whether the party had a range, or water heater, a radiator or other heating device, but left three columns: (1) Per cent. of lighting in mantle burners; (2) per cent. total gas used for cooking or heating; (3) per cent. gas used in such a way that heating value only was required. On the accuracy with which these three columns were calculated depended the success of the investigation, therefore, it seemed necessary to devote a paragraph to the method employed in each case.

With regard to the percentage of gas used for illumination and consumed in mantle burners, it will be conceded at the outset that no absolute figures can be given; but, in the present instance, certain conditions exist which tend to greatly increase the probability of accuracy, if one may so express it. Middletown is a small city, and the writer, believing in personal contact of the manager with his constituents, and being, moreover, often driven by the press of work to convert this belief into reality, willy-nilly, has personally labored, both mentally and physically, in a large proportion of the consumers' homes or stores. Having learned something of their habits, he is able to say offhand, for instance, that Mrs. C. sits in her kitchen (where there is a Welsbach burner) nine-tenths of her evenings, while Mr. L. (across the way) has a rooted aversion to downstairs and reads in his bedroom every night. It is not intended to imply that this familiarity extends to every customer, but it has certainly been of very great assistance in digesting the data secured, and, it is believed, added materially to its accuracy. Moreover, certain assumptions may safely be made, and which dispose of a large number of cases at once. To illustrate, if there be in the living room a reflex lamp and two or three lava tips, it is pretty safe to say that all the gas used in that room is consumed in the mantle. If there is a Welsbach burner in working order in every room, the house should be marked 100 per cent.; if only open flames are used, the percentage is clearly zero. Between these limits there must be a certain amount of conjecture. It will probably be found that an ordinary family uses from 50 to 60 per cent. of its light in the living room, 20 to 30 per cent. in the dining room and kitchen, the remainder in bed and bathrooms, cellar and halls.

The determination of the percentage of gas used in cooking or heating appliances is in some respects an easier matter, although here also conjecture must play a certain part. In a large number of cases there was no gas lighting in the house and the above percentage was, therefore, easily set at 100. The same result obtained in a number of stores, factories, churches, schools, hotels, etc. Again, there were many consumers using only 1 or 2 mantle burners for a few hours each month, but having a number of cooking and heating appliances used throughout the day. Such cases must clearly be rated at from 90 to 95 per cent., or even higher, depending somewhat on the monthly consumption. In the average house, where gas was used for lighting and cooking, it was generally assumed that 60 per cent. of the gas should be credited to the latter. This figure is partly based on assumption, partly on facts. Mr. R. C. Frampton, in a paper read before the National Commercial Gas Association (1910) stated that 50 per cent. of the total gas consumption comes from the domestic gas range. In Canada, the actual amount used (1909) for heat and fuel was 57 per cent. of the total. The report made by New York companies to the Public Service Commission (1909), if we exclude plants turning out less than 9,000,000 feet per year, the majority estimated that over 50 per cent. of the gas supplied was sold for heating and cooking purposes. But as these estimates were made some years ago, it probably will be ageeed, while the gas output has increased many per cent. in recent years, such increase came more from the fuel than from the illuminating branch of the business. In Middletown, some rather careful figures were gathered several years ago, when separate meters were in use for fuel and for light, at which time the percentage sold for fuel purposes was very close to 50. In view of the growth of the gas business in that place, and of the fact that, within the last 3 years, not one new house (with the exception of that of the gas manager) had been even piped for gas lighting, whereas very many of the old residences have been wired, it would seem the above assumption of 60 per cent. was decidedly conservative. Moreover, while tests in any one house are naturally of a restricted value, the writer has had separate meters on his range, Ruud heater and lights, and, as a result of readings covering a number of months, is able to state that 80 per cent. of his gas is used outside the lighting system. From the above, it would probably have been fair to have used 70 per cent. instead of 60, but every effort has been made to secure impartial judgment, so whatever error there be will favor those who still plead the necessity of a candle power requirement.

The filling of the last column, or the percentage of gas used in such a way that heating value only was required, was a matter of simple arithmetic. For example, if 60 per cent. of the total gas was used for cooking, and 60 per cent. of the lighting was employed in mantles, it is clear that 84 per cent. (or 60 per cent. + 60 per cent. of 40) was used for its calorific value only. These three columns were now averaged, and the whole table dissected and summarized as follows:

Total number of consumers represented	1,139
Number of gas ranges	621
Number of combination ranges	62
Number of hot plates	338
Number of water heaters	195
Number of irons, radiators and other heating appliances	182
Number of consumers using no gas for lighting	524
Number of consumers using no gas for heating or cooking	*60
Number of consumers using 90 per cent. or over of lighting gas in mantles	308
Number of consumers using 70 to 90 per cent. of lighting gas in mantles	93
Number of consumers using 50 to 70 per cent. of lighting gas in mantles	92
Number of consumers using from 1 to 50 per cent. of lighting gas in mantles	52
Number of consumers using none of their lighting gas in mantles	67
Number of consumers using all of their gas so that the B. T. U. only are of value	746
Percentage of gas used for cooking or heating	69
Percentage of lighting gas used in mantles	55
Percentage of gas so used that B. T. U. only are of value	86

* Excluding arc consumers.

These figures speak for themselves, but to express some of them in another way may add to their significance: 46 per cent. of all consumers use gas only for cooking or for heat; 65 per cent. of all consumers use *all* their gas in such a way that they care only for its heating value. Only 6 per cent. of the consumers use no lighting gas in mantles and only 5 per cent. use no gas for cooking or heating. It should be added that the above figures are constantly changing in the direction of increase of the mantle and fuel customers, for we never replace a mantle by an open burner, whereas hardly a day passes that the reverse is not true.

At least one other table should have been made and it would have been included, had time permitted. It was the intention of the writer to obtain each consumer's yearly bill, and from it to calculate the actual amount of gas used in mantles and heating appliances. It has been assumed above that the *average* consumption per customer was about the same; but this is clearly not so. And it is a fact that, without exception, the largest consumers are the ones using gas in ranges, industrial appliances and gas arcs. This being so, it will probably be conceded that, had the consumption for each customer been figured, the amount of gas used in such a manner that its candle power did not concern the consumer would have been 93 per cent. or more of the total.

In conclusion it may be said that the results are for one city only; that conditions vary; that all consumers were not seen; that several assumptions are made which may or may not be warranted, and that conclusions should not be drawn from such meager data. Such objections have weight and should be considered; but an answer may be made to each of them. It is true that conditions vary, yet this objection works both ways. In the larger cities there is doubtless a larger proportion of open flame burners; but there is a very much larger proportion of gas used for industrial purposes, and one large manufacturing firm will easily offset from 500 to 1,000 small lighting customers, in so far as the amount of gas used is concerned. Again, human nature is much the same everywhere, and the customer who

is getting poor light and large bills with his open burners, is rapidly learning from his neighbor with smaller bills and more light from his mantle burners.

All consumers were not seen, it is true; but as the vast majority are included in the estimates, so there is no reason to suppose that the few not studied would in any material way change the results. The assumptions made are doubtless not strictly correct; but such assumptions will always have to be made in any survey of this subject. And it is believed that the peculiar conditions mentioned render them more nearly accurate in this case than would generally be true. It is also true that no conclusions should be drawn from data gathered from one city; but when the results merely serve to verify careful estimates, made in a large number of places and under widely varying conditions, they should be entitled to consideration.

The whole investigation leads inevitably to 4 conclusions: (1) The open flame burner is fast disappearing; (2) the greater part of gas used to-day is consumed in ranges and heating appliances; (3) the calorific power of the gas is, therefore, the most important test of its value to the consumer; (4) a candle power standard may benefit those using 10 per cent. of the gas distributed, but it does so at the expense of, and with actual damage to, those using the other 90 per cent. It is earnestly hoped that such facts as these may be of assistance in leading to the abolition of the photometric standard, and it was with such end in view that this investigation was carried out.

Special English Correspondence.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, December 10, 1913.

The Marketing of Coke.—Prepayment Meters and Gas Cookers.—The Removal of Naphthaline from Gas.

Having frequently directed attention to the folly of cut-throat competition in coke disposal, by dumping it in another part of the country perhaps 50 miles away, at a great reduction in price, and pointed out instances of a "dog in the manger" spirit of maintaining a high price locally at the expense of other gas undertakings at a distance, I am pleased to see that some of the larger undertakings have come to their senses in this matter, and that a few days ago a conference was held in the offices of the Institution of Gas Engineers, of representatives of the London Coke Committee and some of the Provincial Gas Companies, who find it necessary to market coke in London. The London Coke Committee comprises representatives from the Metropolitan and principal suburban gas companies, and has been in existence for some time, and there is no doubt that, in districts where several large producers of coke are situated within easy distance of each other, some sort of mutual arrangement is advantageous to all. At last it is recognized that the dumped cheap lot is a powerful factor in weakening the market and reducing prices all round, in which the originator eventually participates. Sometime ago I was one of a similar committee who approached a large provincial undertaking that practically set the tune for the price of coke over a large, sparsely populated district, by following this objectionable short-sighted policy, and that tune pitched in a key 70 or 80 cents lower per ton than the intrinsic value as judged by the local price of coal, and we were met by a blunt refusal to discuss the question. Evidently the invitation of the London Coke Committee did not find universal acceptation, as there were only 7 provincial representatives present, which cannot be regarded as anything like a full presentment of all the parties concerned; but these 7 delegates from Birmingham, Oldham, Leicester, Bradford, Stockport, Hampton Court and Redhill, make up, with the London Committee, a sufficient magnitude as sellers of coke to have a good effect on the market, and to lead others to consider before attempting to compete with them.

The question of the quantity of coke sent from the Midlands to London, and the price at which it was offered in the London market, were discussed, and the provincial representatives agreed that the views of the London Committee should be taken from time to time on the prices at which such coke should be offered. They were invited to attend the monthly meetings of the London Coke Committee from time to time, with a view of discussing the whole situation. The conference also discussed what is really the remedy for over congestion and consequent dumping on foreign ground in order to clear surplus stock, and that is, the endeavor to increase the outlet in the home district. It was thought that if the coke industry, as a whole, could embark in a joint campaign to push the advantages of coke as a smokeless fuel, there would be a speedy remedy for the present situation, and it was decided that the delegates present would follow the lead of the London Coke Committee in this respect.

It should be mentioned that there are three causes which aggravate the position of gas undertakings, who cannot control the production of coke, two of which are temporary, and the other permanent. The high price of oil has led to a general shutting down of water gas plants, and therefore to a larger quantity of coke being put upon the market. The coal gas plant leaves at least one cwt. of coke per 1,000 cubic feet of gas made, to be disposed of. But if 25 per cent. of carbureted water gas is sent out, we not only get a direct *pro rata* reduction in the yield of coke, but also an additional draft on the reduced stock, to the extent of that required in the water gas house, perhaps half-cwt. per 1,000 cubic feet of gas made. So the total effect is a reduction of nearly 40 per cent. on the total quantity of coke for sale.

This cuts both ways. When, for any cause, the carbureted water gas has to be shut down, the coke heaps show a rapid increase. Up to the present the weather has been very mild, to such an extent that the usual November consumption is much reduced. So there has been a smaller demand against an increased production. But cheaper oil and colder weather are both within the range of possibility. The third cause alluded to is the increasing production of coke from coke ovens, harder and of a better quality for various technical purposes to which gas coke is at present applied, and this competition may be expected to increase. Evidently the coke conference is not too previous.

If the gas coke trade is to be maintained, the advice to increase home outlets must be steadily followed up. There is the encouraging fact that some undertakings are able, with no special favorable local conditions, to keep their yards clear. As regards others the converse happens. With a good district, there is yet a constant large coke heap. There is plenty of room in many instances for the increased effort recommended. The principal dumpers are not those close to the colleries who have to compete with cheap coal, and they are not remarkable for a low price in their own district, in fact, the policy of some seems to maintain a fictitious high home price by restricting the home supply.

Now that the London companies are moving in the matter, there are hopes for hundreds of small country gas works who for years have had to endure a heavy loss due to the competition above mentioned.

The British Commercial Gas Association has done some useful work in the way of leaflets suitable for distribution, and there are few districts where the gas consumers, if properly worked, will not also take the resultant coke.

An important report on the question of supplying and fixing cooking stoves free of charge to consumers by prepayment meter, has been presented to the Gas Committee of the Salford Town Council by the Engineer, Mr. W. W. Woodward. At present there are in use in the district 31,267 prepayment meters, representing a total outlay of $100,000. The whole of these are 3-light size, whereas the proper size for cookers is 5-light. The 3-light meter is not giving entire satisfaction, but the scrapping of those already supplied before they are worn out is out of the question. He advised that all new purchases should be of the 5-light size, and thus the matter would gradually adjust itself. The difference between the cost of a 3 and a 5-light dry meter was only $1.50. A suitable cooker could be supplied and set for $12, so the total extra cost would be $13.50, and interest, redemption, repairs and renewals at 15 per cent. on this would amount to $2.00. For this outlay there would be secured an average additional consumption of 8,000 cubic feet of gas per annum, which at a net profit of 27 cents would represent an income of $2.16; so that with proper regulations to secure constant use of the cookers, after paying all expenses, there would be a profit of 16 cents per cooker.

Salford is not usually regarded as a back number in gas matters, but is certainly rather behind the times in this. Nearly all gas companies have followed the practice of supplying gas cookers free with slot meter installations from the first, and in country districts the cooker is the backbone of the business. The slot department would not pay without it. In the matter of the 5 light meter also, it is very general practice, considering the slight difference in cost, to use this size exclusively, except in special cases, and to canvass for the use of extra lights, with the object of increasing the consumption per consumer. Given a district of 2,000 slot consumers, and an average of 10,000 cubic feet per consumer, we get a total output of 20 million cubic feet per annum. If the average can by any means be raised to

12,000 cubic feet we get an additional 4 millions per annum without any increase of capital outlay, collection or office expenses. This is equivalent to 400 additional consumers, without the cost of 400 services, meters, cookers and sets of free fittings. So it pays to work the slot department for gas heaters, irons and technical appliances, or anything that will increase the consumption per consumer.

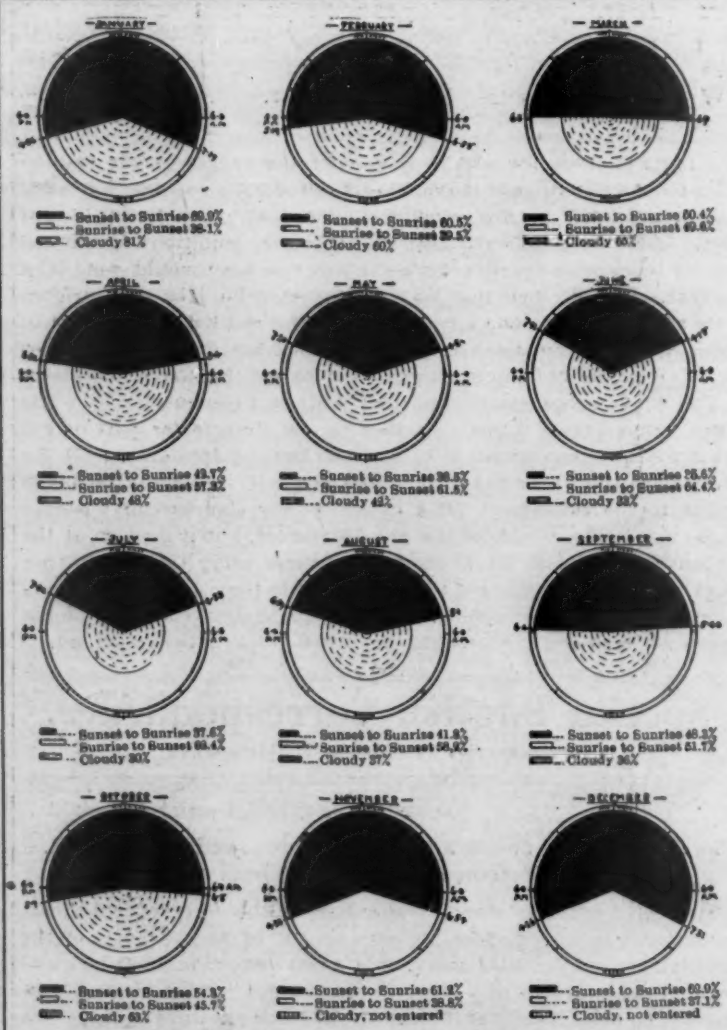
At a recent meeting of the Scottish Section of the Society of Chemical Industry, attention was directed to the ever green subject of naphthaline in coal gas, by a paper contributed by Mr. McLeod, Manager of the Greenock Gas Works, and Dr. Russell Henderson. It seems that naphthaline, like the poor, will be always with us. No doubt, carbureted water gas, and in a large degree continuous carbonization in vertical retorts, are in some sense a palliative, but I hear of some engineers who run these modern appendages, and are yet inquiring for naphthaline remedies. The authors do not add anything fresh to the current explanations of the causes that lead to the formation of this troublesome substance, or to those that govern the variation from time to time. It is already known that with some coals the production of naphthaline is so slight that it is never deposited, and that other sorts give continual trouble. Also, that the state of subdivision of the coal, the temperatures of carbonization, the time and extent of the area of exposure to hot coke or walls of the retorts, and the extent of void or empty space above the charge in the retort, are all important factors. In my experience, it rarely if ever appears in works making less than 100,000 cubic feet per 24 hours. Even with the same kinds of coal and the same section of retorts and conditions of working, as indicated by the make and quality of the gas, the small works goes free, while the half million or million a day plant has serious trouble. Perhaps the difference in the area of the condensing plant, and the rate at which the gas passes, may furnish some explanation. Also there is some difference in the temperature of the gas at various points between the retort mouthpiece and the condenser outlet.

The authors have examined two oils as to suitabilily for extracting naphthaline from coal gas. One a naphtha from a Scottish shale works, and the other a coal tar distillate. The latter was found the more suitable because it was less volatile than the naphtha, and after the first few hours in the washer the rate of evaporation is very slow. It dissolves a large quantity of naphthaline, and being a tar product, has no appreciable effect on the quality of the storage well tar when run off after saturation, while the shale naphtha, being a paraffin product, alters the nature of the tar. Although the first cost of tar distillate is higher, the actual cost of washing the gas per 1,000 cubic feet is the same. The highest naphthaline content found in Greenock gas at the inlet of the oil washer was 24.7 grains per 100 cubic feet, and the lowest 11.2 grains. The average quantity removed in the washer was 8.5 grains. As the average between the maximum and the minimum is 18 grains, it is evident that the washing at Greenock was only successful to the extent of something under 50 per cent., but this was sufficient to largely reduce trouble in the district.

Since the proportion of naphthaline is so small—the maximum above mentioned being less than one part in 1,000—it is evident that any process, to be successful, must bring gas into extremely intimate contact with the oil. There must be a much closer mixture than can be secured by bubbling the gas through the oil. It would appear that the best results could be secured with washers of the mechanical centrifugal type, in which the gas is violently agitated in contact with a fine spray of oil. The naphthaline extractor is a common feature in every large gas works, and the general tendency is towards a non-volatile oil that will dissolve and remove the enemy, in preference to a more volatile spirit that will evaporate and act as a solvent or carrier for the naphthaline. Which process is really the more effective is probably a matter of the naphthaline content.

New Methods and Appliances.

WHY GAS LIGHTING BILLS VARY.—Another fine example of up-to-date exemplifying is traceable to the business end of that well-managed corporation, the Consumers' Gas Company, Toronto, Canada. It comes with the January issue of the monthly periodical published by the Company, the title of which is "Gas News," and is in the shape of the diagrammatic chart, printed herewith. And while the various phases so graphically depicted are tuned for variations in sunrise and sunset for the Toronto district, nevertheless the scheme is so simple that its application to any district under the sun may be made without adoo. As can be seen, each circle represents one month; and the average numbers of hours (sunset and sunrise, and between sunrise and sunset) are noted under each circle. The shaded portions indicate the percentage of cloudy hours between sunrise and sunset.



MODERN LAMP POSTS AND LIGHTING STANDARDS.—The Central Foundry Company, New York city, has been actively engaged for some time in the developing of a series of arc and incandescent lamp posts and lighting standards, for use by the operators of gas and electric lighting plants, and by municipal authorities as well. Several installations of the Central types of these fixtures are maintained in several Eastern cities. The illustration herewith shows one type of post that is meeting with great favor.

The lengthy experience of the Central Foundry Company in the manufacture and handling of cast iron, in the making of its widely known Universal brand of pipe, which entails the highly accurate machining of the pipe ends, and the final fact that it completely controls the production of the iron used in its foundries, insure at the outset a very high manufacturing standard. The Company's foundries, warehouses and branch offices are located in several cities throughout the United States, all in thorough co-operation, which insures prompt delivery of materials. Besides the manufacture of lamp posts the Company also makes many other municipal and power plant products, such as power piping, manhole frames and covers, valve boxes, etc.

ECONOMIES IN RUNNING THE BOILER FIRE, WITH SPECIAL REFERENCE TO SOME MODIFICATIONS OF A CHAIN GRATE.—In a paper read by Mr. W. F. Faber, before the Cleveland Engineering Society, the author remarked:

The man with the shovel, if told by the expert to fire with the "coking method," and if reasonably intelligent, soon finds that he is putting the coal through a cycle of operations by which the volatiles are first distilled and driven off, largely by radiant heat from the side walls and arch (if it is an extension furnace), and from the incandescent fuel farther within the furnace; burning the resultant coke by a proper admixture of air through the grate bars, and finally riddling the ashes into the pit at the middle and back of the furnace.

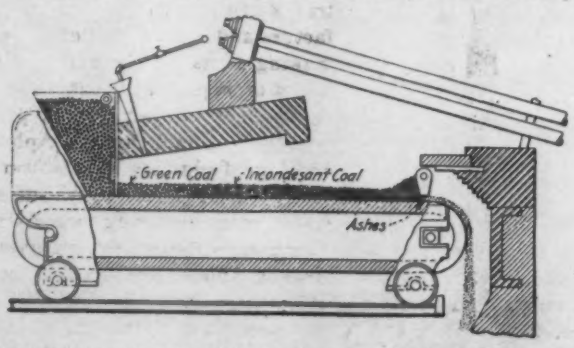
By this method of firing it is possible to get high furnace efficiency, but it only applies to furnaces equipped with non-automatic grates and hand firing. Even in plants thus equipped we have trouble because the firemen seldom follow instructions and soon get back to their old ways, which, in most cases, may be called the spreading system of firing. This is a good method if properly followed, but, as usually done, it means a great waste of fuel, because the fireman persists in firing 5 or 6 shovels of coal where 3 would do much better, presumably so that he can sit down between firings, for 15 or 20 minutes.

Fundamentally, the idea of the chain grate stoker is correct. It carries the coal through the cycle that the intelligent fireman does when he uses the coking method on a flat grate, and if we could control the air supply better and hold the fuel on the grate long enough to insure complete burning, its efficiency would be greatly improved. Where chain grate stokers are used, we appreciate that there are certain requirements as to physical condition of the coal that we must consider and provide means for obtaining. One important thing is proper and approximately uniform size of coal. Formerly when run-of-mine coal had to be crushed we considered it good when 85 to 90 per cent. would pass through a 1¼ by 1¼-inch screen, but now we want 85 to 90 per cent. to pass a ¾-inch screen. This change in the size of the coal for chain grate stokers has been brought about by attention to the combustible in the ash. Not long ago the combustible in the ash ordinarily ran as high as 35 to 55 per cent. An attachment was designed to hold this partly burned fuel in the furnace after it had left the chain grate, by throwing it on an auxiliary grate where it was kept until burnt out. But after 2 or 3 promising trials this effort at improvement was abandoned.

To provide a sufficient air supply under the ignition arch when a coking coal is used, the method of introducing air shown in the illustration has been tried with some success. Originally the introduction of air at this point was to prevent smoke, and results seemed so promising that tests were made of resultant gases, with and without the blower. The results were as follows:

Draft.	With Blower, 0.40 Inch.	Without Blower, 0.42 Inch.
CO_2.....	.....10.4 per cent.	9.9 per cent.
O.....	8.4 " "	8.8 " "
CO.....	0.0 " "	0.0 " "

We think the combustible in the ash should be cut down to 15 or 20 per cent.; meaning in a boiler house that uses 50,000 tons of coal per year, of 12 per cent. average ash, a saving of some 1,500 tons of coal. In addition to getting more uniform size of coal from the crushers, we provide our chain grate furnaces with a water back of improved design (shown in the cut), hung on trunnions, so that it may swing



Scheme for Admitting Air and Holding Partly Burned Fuel in a Chain Grate Stoker.

when large clinkers are discharged into the ash pit. Ordinarily, this water back, when hanging vertically, is from 1 to 1½ inches above the chain grate, and with coals that do not clinker badly, it acts as a skimmer, allowing the thoroughly burnt-out fuel to be discharged into the ash pit, holding the partly burnt-out until it has time to be consumed. Tests with this improved water back show a saving of 3 per cent. over stokers with the older type.

The standards of furnace efficiency must be determined by the minimum combustible left unconsumed that it is practicable to get with simple durable devices; by the maximum possible carbon dioxide, without loss through lack of air, resulting in complete combustion, and a high percentage of carbon monoxide and unconsumed hydrocarbons; and by minimum radiation through the walls of the furnace. Best practice shows that, when using the grade of coal mentioned, 12 to 13 per cent. of carbon dioxide and 15 to 20 per cent. combustible in the ash are good averages to reach.

ARTIFICIAL DAYLIGHT FOR THE DINING TABLE.—Mr. Herbert E. Ives, Physicist, the United Gas Improvement Company, contributes to the current issue of the *Lighting Journal* this memorandum respecting the matter in hand:

Artificial daylight is at present to be had only in comparatively inefficient form, and, because of its high cost, it is applicable only to cases where small areas are to be illuminated, or where the economic value of longer daylight working hours offsets the expense. The illumination of whole rooms can hardly be considered feasible when it calls for a tenfold increase in the lighting bills, as at present.

There is, however, one place in the home (the dining table), where general usage calls for localized light under conditions not greatly different from those to which artificial daylight is restricted. Illuminated by a dome, the white tablecloth serves as the chief, and often only, light source of the rest of the room. The diners' faces are lighted therefrom and the background of obscurity is a merit rather than a defect. Usually, because of the concentration of light on a small area, there is much more light than is needed, a condition inviting to some pleasing light absorbing scheme.

The dining room installation forming the subject matter of this note is the first case on record of artificial daylight for the table. It was put in as an experiment, chiefly to note the effects, psychological and other. It has proved remarkably pleasant, and some unexpected beauties have been brought out by its continued use.

Before its modification to a daylight unit, the fixture was a combination gas and electric, consisting of a central tube carrying an inverted gas burner at the bottom, while from a circular shallow bowl 4 electric sockets hung on ornamental chains.

The mode of transformation into a gas daylight "dome" was dictated largely by the construction of the original fixture and by the daylight booth parts obtainable. In the daylight booth an upright mantle is used, its light being thrown downward by a reflector, the upright mantle having several advantages over the inverted, among them higher candle power and lower temperature of metal parts. In the present case it seemed easier to try the inverted mantle burner already in place. The holder of the absorbing screens consists of the metal model of the "Daylight Producer" with its booth portion removed. This holder is suspended by chains from the bowl, using the points of attachment of the electric socket chains.

The standard parabolic reflector is used, but since this is a concentrating reflector, with the mantle in its normal position, the inverted mantle is placed below the optical focus, with the result that the reflected light is thrown far out and covers the whole table top. As the reflector was not calculated for this purpose, the center of the table is not quite so bright as the edges; and since the light reaching the edge of the table goes through a greater thickness of colored glass, besides coming from the reflector instead of direct from the mantle, some difference of color is detectable between center and edge, but for dining purposes it does not matter.

At first sight the most striking effect of the daylight color is the natural appearance of the silverware and the gilt edges of china, both of which are noticeably different under artificial light, but, of course salads and flowers profit nearly as much. More important, however, than the correct color values is the soft, pleasant character of the light. By contrast ordinary artificial light in an adjoining room seems positively to burn the eyes. Tastes will of course differ, but those who are at present using this daylight at meals are unanimous in the belief that it is far more comfortable than yellow candle light.

The daylight dome is seen to best advantage at dawn and at sunset. Early rising is robbed of some of its gloominess when the breakfast table is apparently illuminated by light from out-of-doors. One drawback to using it at breakfast time is that the artificial daylight merges so perfectly with the real that one forgets to turn off the gas.

In the early evening it is particularly pleasant to pass from window light to table light without the glaring color change formerly necessary at sunset. A pleasing diversion has been to turn on the artificial light before guests have seated themselves and before it is dark outside, when the added artificial light is not noticeable, and later enjoy their surprise when they suddenly notice that though night has fallen out of doors there is still bright daylight on the table.

Items of Interest
FROM VARIOUS LOCALITIES.

THE Nominations' Committee, the Grand Rapids (Mich.) Association of Commerce, has unanimously chosen Mr. Charles B. Kelsey (President American Public Utilities Company, Grand Rapids, and Vice President the Commercial Savings Bank, Grand Rapids) as sole nominee for President of the Association. Of course, our readers are aware that Mr. Kelsey is widely known, not only as a banker, and through his active connection with the American Public Utilities Company, but for the positive interest taken by him in advancing the affairs of the State of Michigan and the community of Grand Rapids, as well.

THE proprietors of the Citizens Gas Company, Indianapolis, Ind., report progress in the plans for the consolidating of its operating force with that of the old Indianapolis Company, despite the fact that the new by-product coke ovens of the latter in the Langsdale avenue district are not yet in active commission. The ovens have been in the heating-up stage for a fortnight or so, but the brickwork will require considerably longer heating attention before it is positively ready for operation. The Citizens Company has been operating the old coal gas plant, and the old water gas plant as well, of the Indianapolis Company, in order to necessarily supplement the supply to the city from the Prospect street ovens; but as soon as the Langsdale avenue coke ovens can he put into commission that coal plant will be dismantled to permit of further betterments in con nection wih the coke ovens. Meanwhile the water gas plant will be retained as an emergency station. By-the-way, there is no let up in the increase of output in Indianapolis. As a sample: The total output for November, 1912, was 179,782,900 cubic feet; that for November, 1913, was 189,191,000 cubic feet; or the daily averages were, respectively, 5,992,000 and 6,306,000.

MR. W. H. REDMAN, Secretary, the American Gas Construction Company, of Chicago, having checked up the work done on the Hillsboro (Ills.) gas plant of the Southern Illinois Light and Power Company, states that the Hillsboro works will be ready for operation about the 15th prox.

CERTAIN "residents" of Minneapolis, Minn., have been pestering the daily press with complaints that, since the decreased gas rate there became operative, the illuminating value, and the heating value as well, of the gas supplied, were greatly under these values when the gas rate was higher. One of the newspapers, to have official figures, applied for such to City Gas Inspector Meeds. These were in due time forwarded, and the newspaper man was enabled to inform the "citizens" that as to illuminating power the gas during November averaged 19.80 candles—1.80 candles above the requirement; that, as to heating value, the average was 620 heat units—or 20 above the prescribed standard.

MR. MATT. S. SLOAN, heretofore Assistant to the President (Mr. George Bullock) and General Manager of the Birmingham (Ala.) Railway, Light and Power Company, has been promoted to the post of Assistant to Vice-President Pevear, of the New Orleans Street Railway Company. Mr. John P. H. de Windt succeeds Mr. Sloan at Birmingham.

AT the mid-December meeting of the Directors of the Worcester (Mass) Company it was voted to give an increase in wages of 2½ per cent. to all the employees on the payrolls for a period of 12 months or over.

THE City Council, of Williamsburg, Va., during its final December session, failed to consider the terms of the franchise submitted by certain capitalists who are proposing to construct and operate a gas plant in the named place. The non-action was really caused by the failure of the lawyers to have their papers presented in time to permit the members to study the application in due form.

"B. S. B.," writing from Boston, Mass., under date of the 22d inst., says that the petition of the Haverhill (Mass.) Gas Light Company, for the right to an additional issue of stock, has been so modified that no practical opposition will likely be manifested by the Municipal Council to the sanction, by the Massachusetts Board of Gas and Electric Light Commissioners, to an increase of 2,500 shares, par value, $100.

MR. H. L. RICHARDSON, recently elected Superintendent of the Sussex Light and Power Company, of Seaford, Del., vice Mr. Charles C. Stephenson (resigned), has actively assumed charge.

AN important conference between the New Hampshire Public Service Commission and the representatives of the various Gas Companies of the State, was held in Portsmouth, the morning of the 18th inst. The hearing was the direct sequel of an exhaustive investigation, conducted by the gas expert of the Commission, as to whether the thermal value should be accepted as the State standard, rather than the candle unit now in vogue.

THE concession in the net gas rate (virtually amounting to 10 cents per 1,000) at Rockville, Conn., which was made operative as of February 1, 1914, will also apply to the Williamantic (Conn.) section as well. The ruling rate is $1.60, gross, less 10 cents for prompt payment; the succeeding one will be $1.50, gross, less 10 cents.

"T. R. L." is informed that, at the meeting of the United Gas and Electric Company, held in Hartford, Conn., about mid-December, the the following Directors were chosen: George W. Bacon, of Ford, Bacon & Davis, N. Y.; S. Z. Mitchell, President, the Electric Bond and Share Co., New York; A. J. Hemphill, President, Guaranty Trust Company, New York; John G. Cannon, President, Hibernia Bank and Trust Co., New Orleans; A. H. Wiggin, President, Chase National Bank, New York; W. P. G. Harding, President, First National Bank, Birmingham, Ala.; R. L. Williams, Baltimore, Md.; F. V. Hayne, New Orleans, La.; F. A. Sayles, Pawtucket, R. I.; F. M. Kirby, Wilkes-Barre, Pa.

THE New Jersey Northern Gas Company is proposing to extend its service to and through Hopewell into Pennington and surroundings. To further its transactions the Company will open an office in Hopewell, the branch to be in charge of Mr. George Wilgus, since 1908 in charge of the Company's branch in Lambertville.

THE new rate schedule put forward by the proprietors of the Cohoes (N. Y.) Gas Light Company—$1.10, Jan. 1, 1914; $1.05, Jan. 1, 1915; $1, Jan. 1, 1916—seems to have had a most soothing effect on all concerned, especially in the instance of the Cohoes Manufacturers' Association, and especially on its Secretary, Mr. F. H. Searles. In any event, at a meeting of said Association, held shortly after the reduction announcement was made, this preamble and resolution were ordered spread on the minutes:

"*Whereas*, The Cohoes Gas Light Company has, in compliance with the request of this Association, through its legislative committee, agreed to reduce its rates for gas furnished by the Company to consumers, to meet the rates recently established in the city of Watervliet, and which (beginning January 1, 1916), practically within two years, will bring the price to $1 per 1,000 cubic feet; be it

"*Resolved*, That the Cohoes Manufacturers' Association expresses its satisfaction with the new rates, as outlined in Mr. Semple's communication, and that a vote of thanks for the prompt and effective compliance to the request of this Association be sent to Mr. Lorenzo Semple as President of the Cohoes Gas Light Company."

ON the 1st prox., Mr. T. M. Reeves (Cape May, N J.) succeeds Mr. C. W. Weston as Superintendent of the Carbondale (Pa.) Gas Company.

MR. H. M. BUCK, for several years Superintendent of the American Gas Company's properties in Waukesha, Wis., has resigned from its service.

THE Connecticut Power Company has arranged a plan and method (under the direct inspiration of Mr. V. E. Bird, General Manager of the New London division) under which the New London (Conn.) gas plant will be virtually reconstructed. Many of the contracts for the new machinery (water gas set, blowers, exhausters, purifiers, station

meters, etc.) have been placed, and others are in process of placing. The generating system will be much larger than the old one, and it will be housed in a new structure. Active work on construction account will be commenced as soon as possible. The Stone & Webster Engineering Corporation has general direction of the betterment tasks.

THE capital stock of the Allentown (Pa.) Gas Company has been increased to $700,000 from $500,000.

THE arranged new gas rate schedule for Birmingham, Ala., by the Birmingham Railway, Light and Power Company, operative from the 1st inst., is appended, in reply to an inquiry from Mr. A. B. Sexton:

Monthly Consumption.	Rate per 1,000.
First 10,000 cubic feet	$1.00
Second 10,000 "	0.90
Third 10,000 "	0.80
All in excess of 30,000 cubic feet	0.70

Further, it is agreed that these rates will be subject to a discount of 5 cents per 1,000 feet on all bills showing a use of less than 30,000 cubic feet, provided accounts rendered are settled within 10 days from presentation.

THE Jury of Awards, in connection with the recent First International Exposition of Safety and Sanitation, New York, awarded a Grand Prize to the Consolidated Gas Company, New York, for the excellence of its system, both as to method and practice.

SOME days ago, by direct order of the presiding justice, a jury in the Circuit Court, sitting in Hackensack, Bergen County, N. J., rendered a verdict for $2,556.05, with interest, in favor of the Public Service Gas Company, as plaintiff in proceedings against the Hudson River Realty Company (Borough of Cliffside Park), which sum was due plaintiff under a contract with defendant to extend its gas mains through the Realty Company's property.

AT a regular meeting of the Town Commissioners of Tarboro, N. C., the Board of Aldermen authorized Mayor Paul Jones and Alderman R. B. Proctor to compile all data available respecting the feasibility of constructing a gas plant to be operated on municipal account, they to report at the next regular meeting of the Board. Our informant in the premises further declares the matter of house servants was mainly responsible for this action, the Edgecombe Betterment Association having petitioned the Board for a minimum rate for electric currents for cooking use. Lighting Commissioner C. P. McClure (the town now maintains a municipal electric lighting plant) in taking part in the gas works discussion, said the town could not favorably consider that request in that the additional cost would not justify the initial outlay in respect of further electrical installations. Hence, he declared the proper course to pursue was to install a gas plant, and to furnish the gas current only to users of such on fuel account—kttchen or otherwise.

A CORRESPONDENT in Seattle, writing under date of the 19th inst., says: "I have not seen any mention in the JOURNAL of the reversing of Judge Albertson's findings in respect to the right of gas companies of Washington to charge a minimum monthly rate. Accordingly I send you this memorandum, in the belief that it will be of interest to your readers: 'When a complaint is made to the Public Service Commission, relative to the unreasonableness of rates, and it is not sustained by testimony given to the Commission, the latter may properly dismiss the case and the burden of proving that the rates are reasonable does not fall upon the company involved, is the pronouncement of the Supreme Court, of Washington, in a recent decision, in reversal of Judge R. B. Albertson, of the King County Superior Court, in the case of the State on the relation of the City of Seattle, against the Washington Public Service Commission and the Seattle Lighting Company, appellants. As a result the Seattle Lighting Company, supplying gas to the residents of Seattle, may put into effect its increase in the minimum rate from 25 cents to 50 cents per month. When this rate was proposed the city of Seattle contended it was unjust and unreasonable and filed a complaint with the Public Service Commission to that effect. The Commission, after a hearing, held that Seattle had not proven its case and dismissed the complaint. The City appealed to the courts, with the result here given.'"

MR. J. M. SEIBERT, Superintendent of the Marietta (O.) Gas Company, since 1885, has resigned. His successor had not been named up to the 20th inst.

THE most notable thing that appealed to Dr Maria Montessori, the famous Italian educationalist, on her first visit to America (early this month) was the illumination of the city streets—particularly those of New York and Philadelphia. This is what she had to say to a reporter of one of our important daily newspapers: "When I came into New York harbor, I was amazed! Dumfounded! But when I drove through the streets words would not show my feelings. I imagined for a moment that a great festival must have been under celebration, and I emphatically declare that the greatest Emperor of modern times could not enter Italy under such wonderful illumination. What could I say when I found that turning night into day was only the usual thing in the great cities of your wonderful country!"

"B. M. M.," writing from San Jose, Cal., under date of the 19th inst, states that the Domestic Science Department, San Jose Home of Benevolence, is to have, through the kindness and consideration of the Pacific Gas and Electric Co., a modern, gas kitchen. To do this the Company extended one of its 6-inch lines over a stretch of 500 feet so the Home could be assured an ample supply for their kitchen practices in connection with the objects of the Home; and heretofore, owing to the conditions, the work was rendered more difficult with results not altogether beneficial, because restricted to the employment of a single coal range. Now, however, owing to the Company's attention and Manager J. D. Kuster's generosity, individual tables with separate burners are being set up, much to the delight of the cooks and the better contentment of Mrs. Wm. S. Van Dolsen, Chairwoman of the Home's Industrial Division.

MR. PAUL LEAKE, Publicity Manager, the American Public Utilities Company, Grand Rapids, Mich., informs us that the earnings of the subsidiaries of the Corporation, for the 12 months, ended October 31st, 1913, show: Gross, from operations, $2,231,810; operating expense, $1,236,282; net, $995,528. Including miscellaneous sources of income, deducting therefrom expense, the net amounted to $1,030,540. The fixed charges (interest for 12 months on underlying securities and collateral trust bonds, and the dividend on $3,914,000 preferred) apportioned to each proper account being deducted from the net shows a balance going forward to surplus of $220,232.

ANOTHER important consolidation of gas interests in Pennsylvania was recently announced, the same resulting from a complete affiliation of the Bethlehem Consolidated Gas Company and its allied interests with the Allentown Gas Company and its dependencies. The unifier is the United Gas Improvement Company, which corporation has dominated gas affairs in Allentown for some years, the Bethlehem Company having been controlled by the Associated Gas and Electric Company, which in turn was a dependence of the J. G. White Corporation. The succeeding Corporation is to be known as the Allentown-Bethlehem Gas Company, capitalized in $1,200,000 for the immediate present, and its executive management will be headed by Mr. Walton Clark, Vice-President, the U. G. I.

MR. A. H LEWIS, Manager, the Bellevue offices of the Logan Gas Company, has been promoted to its Fremont (O.) offices, succeeding Mr. P. H. Bailey, who went to Louisville, Ky. Mr. Charles Schell (Fremont) takes charge of the Bellevue headquarters.

THE cost of the projected new and renewal work on the plants of the Birmingham (Ala.) Railway, Light and Power Company is now placed at $700,000, instead of the tentative sum of $5 00,000. At least 60 per cent. of this goes to the gas division.

"S. K. J." writes that Mr. W. E. McFadden, for some time Manager of the Salina (Kas.) Light, Power and Gas Company, has resigned that position and will move to Nebraska. His successor will be Mr. J. E. Harsh, who comes from Sedalia, Mo. Mr. Harsh has been Treasurer and New Business Manager of the City Light and Traction Company of Sedalia, and has had wide experience with the Henry L. Doherty Company, serving previously in Joplin, Mo., and Denver, Col.

The Market FOR GAS SECURITIES.

Last week the sure thing operators evidently awoke to the fact that some standard goods were going at decidedly low figures, with the result that some important gains were recorded in gas shares. Especially was this the case in respect of Consolidated, which came in this morning (Friday) at 130½ to 131.

This is a gain of 3 full points, and is likely the precursor of still livelier advances in the near future. The Company's position grows stronger every day, no matter from what angle the glass is adjusted. By the-way, the quotation for January 6th, 1913, or virtually a twelvemonth ago, was 140 to 140½, and while it may seem rather an odd prediction, we would not be in any sense surprised were the first quotation for 1914 in our columns to equal that for 1813—good bye to its topsy-turvy record.

Strange to say, Brooklyn Union manages, through the force of inherent strength, to keep above 120. This week it came in at the figures reported for last week, 121½ to 123. All things considered, though, 150 bid would not be at all high for it. Another bit of sharp upturn is to be noted in respect of Chicago, which sold as high as 121½ in the interim, and opened to-day at 120¾ to 120¾.

The general gas share market shows marked strength along the line, and many a shrewd investor is chuckling with good reason over "bargains" secured by him during gloomy 1913. Consolidated, for instance, at 117! The Am. Gas and Electric's quarterly dividend, of 2 on the common and 1½ on the preferred, are payable—the first named on February 2d, the latter on April 1st. This Company's subsidiary (the Tiffin (O.) Power and Light) is proposing to issue $1,300,000 first mortgage 5's, and $720,000 preferred. The Cincinnati Gas and Electric quarterly of 1½ is payable the 2d prox.

The Consolidated Company, of Baltimore, is before the Public Service Commission for permission to issue $1,416,000 common, to take up a long line of short term notes, etc.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.
115 BROADWAY, NEW YORK CITY.
DECEMBER 29.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$99,816,500	100	130½	131
Central Union Gas Co.—				
1st 5's, due 1927, J. & J.	3,500,000	1,000	101	103
Equitable Gas Light Co.—				
Con. 5's, due 1932, M. & S.	1,000,000	1,000	101	104
Mutual Gas Co.	3,500,000	100	157	157
New Amsterdam Gas Co.—				
1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	99	101
New York & Richmond Gas				
Co. (Staten Island)	1,500,000	100	59	62
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	98¼	100¼
New York and East River—				
1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	96	100
Northern Union—				
1st 5's, due 1927, J. & J.	1,250,000	1,000	100	102
Standard	5,000,000	100	102	104
Preferred	5,000,000	100	93	94
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	90	95
The Brooklyn Union	15,000,000	1,000	121½	123
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	500,000	1,000	97	100
Boston United Gas Co.—				
1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	85
Bonds (6's)	150,000	1,000	—	—
Consumers, Toronto	2,000,000	50	200	204
Chicago Gas Co. Guaranteed Gold Bonds	7,660,000	1,000	104	106¼
Consolidated Gas Co. of N. J.	1,000,000	100	15	—
Con. Mtg. 5's	976,000	1,000	94	96
Bonds	75,000	—	—	100
Cincinnati Gas and Electric Co.	29,500,000	100	67	69
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	96	98
Columbus Gas Light & Fuel Company	1,662,750	100	65¼	66¼
Preferred	3,026,500	100	33	35¼
Consolidated, Baltimore	13,460,084		118¾	119
Mortgages, 5's	3,400,000		—	—
General Mortgage 4½	10,661,000		—	—
Con. Gas Co., Baltimore City, 4½	2,751,000		—	—
Equitable Gas & Fuel Co., Chicago, Bonds	3,000,000	1,000	—	101
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,350,000	1,000	100	101
Hartford	750,000	25	190	200
Hudson County Gas Co., of New Jersey	10,500,000	—	130	138
" Bonds, 5's	10,500,000	—	104	106
Indianapolis	2,000,000	—	85	90
" Bonds, 5's	3,650,000	—	90	93
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	390,000	1,000	97	100
Laclede Gas Co., St. Louis.	10,000,000	100	93	96
Preferred	3,500,000	100	—	102½
Bonds	10,000,000	1,000	102½	103
Madison Gas and Electric Co.				
" 1st Mtg. 6's	400,000	1,000	106	
Massachusetts Gas Companies, of Boston	25,000,000	100	89½	90
Preferred	25,000,000	100	89½	90
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	120½	120¾
1st Mortgage	20,100,000	1,000	102	102½
2d "	2,500,000	1,000	104	—
Pacific Gas and Electric Co.	15,500,000	—	33½	35
St. Joseph Gas Co.—				
1st Mtg. 5's	1,000,000	1,000	96	8
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	105
Extension, 6's	600,000	1,000	113½	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y	1,970,000	100	50	55
Bonds	2,047,000	1,000	101	103
United Gas Imp. Co.	55,502,900	50	167	168

MEETING TIMES OF THE VARIOUS GAS ASSOCIATIONS.

Alabama Light and Traction Company.—Annual meeting, May ——1914. Officers, President, R. L. Ellis, Selma; Treasurer and Secretary, H. O. Hanson, Mobile.

American Gas Institute.—Annual meeting, New York, October 21, 23, 1914. Officers: President, W. H. Gartley, Philadelphia. Secretary, Geo. G. Ramsdell, 29 West 39th st., N. Y. City.

Canadian Gas Association.—Annual meeting————1914. Officers: President, A. A. Dion, Ottawa; Secretary and Treasurer, John Keilior, Hamilton, Ont.

Empire State Gas and Electric Association.—Annual meeting, New York City, Oct. 1914. Officers: President, J. T. Hutchings, Bochester, N. Y.; Secretary, C. H. B Chapin, 29 W. 39th street. New York City.

Gas Meters.—Monthly Section Meetings; Grand Commissioner, Will. W. Barnes. East Orange, N. J.; Gen'l Sec'y, H Thurston Owens, La Crosse, Wis.; New York Section, Chairman, W. H. Pettes; Secretary, G. E. Smith, Sipp Avenue, Jersey City, N. J Philadelphia Section; Chairman, Stanley Grady; Secretary, H. E. Stiteler, Broad and Arch streets. Cleveland Section, Chairman, F. R. Hutchinson; Secretary, Wm. Holtz, East Ohio Gas Co. New England Section, Chairman, T. W. Jennings, Boston; Sec., F. K. Wells, 69 Broad street, Boston. Winona Section, Winona, Minn., W. F. Clausen, Chairman. Bethlehem Section, Truaman Weithnecht, Chairman; Sec.-Treas., Truman Buss. South Bethlehem, Pa. Wisconsin Section, C. H. Wiggers, Chairman; A. A. Ott, Secretary, Milwaukee, Wis.

Guild of Gas Managers of New England.—Annual meeting, March, 1914. Young's Hotel, Boston; monthly meeting, second Saturday. Officers: President, Walter G. Africa, Manchester, N. H.; Secretary, H. K. Morrison, Brockton, Mass.

Illinois Gas Association.—Annual meeting, March 18th and 19th, 1914. Chicago, Ills. Officers: President, W. F. Barrett, Chicago, Ills.; Secretary-Treasurer, Horace H, Clark, 115 No. Oak Park avenue, Oak Park, Ills.

Illuminating Engineering Society.—Annual meeting, Cleveland, O., September, 1914. Meetings of Sections, monthly. Pres., Charles O. Bond; General Secretary, J. D Israel, 29 W. 39th street, New York City. Sections: New York, Secretary, C. L. Law, 124 West 42d street. New England, Secretary, H. C. Jones, 10 High street, Boston, Mass. Philadelphia, Secretary, L. B. Eichengreen, Broad and Arch streets. Chicago, Secretary, J B. Jackson, 28 North Market street. Pittsburgh, Secretary, J. C. Mundo, Oliver Building.

Indiana Gas Association.—Annual meeting, March 11 and 12, 1914. Terre Haute. Officers: President, A. S. Cooke, Terre Haute; Vice-President, A. C. Blinn, Evansville; Secretary-Treasurer, Philmer Eves, Indianapolis.

Iowa District Gas Association.—Annual meeting, Davenport, May 27, 28, 29, 1914 Officers: President, B. C. Adams, Lincoln, Neb.; Secretary, G. I. Vincent, Des Moines, Ia.

Kansas Gas, Water and Electric Light Association.—Annual meeting, October—— 1914 Arkansas City. Officers: President, Al. Newman, Arkansas City; Secretary and Treasurer, Ivan Thomas, Wichita Kas.

Michigan Gas Association.—Annual meeting, September, 1914. Place, undetermined. Officers: President, H. W. Douglas, Ann Arbor, Mich; Secretary-Treasurer, Glenn R. Chamberlain, Grand Rapids, Mich.

Missouri Electric Light, Gas, Water Works and Street Railway Association.—Annual meeting, April, 1914, Mexico, Mo. Officers: President, P. A. Bertrand, Joplin, Mo.; Secretary and Treasurer, P. W. Markham, Brookfield, Mo.

National Commercial Gas Association.—Annual meeting, Dec. ——1914, Minneapolis, Minn. Officers: President, P. S. Young, Newark, N. J.; Secretary, Louis Stotz, 29 West 39th street, New York City.

Natural Gas Association.—Annual meeting, St. Louis, Mo., May 19 and 20, 1914: Officers: President, E. L. Brundrett, Kansas City, Mo.; Secy-Treas., T. Clive Jones, Delaware, O.

New England Gas Association.—Annual meeting, February, 18th and 19th, 1914. Boston Officers: President, T. H. Hintze, Providence, R. I.; Secretary-Treasurer, N. W. Gifford, East Boston, Mass.

New Jersey State Gas Association.—Next Meeting, —— ——, 1914, Asbury Park N.J. President, C. F. Butcher, Freehold, N. J.; Sec'y-Treasurer, O. F. Potter, Newark, N. J.

Ohio Gas Association.—Annual meeting, February ——— 1914 Columbus, O.; President, John M. Garard, Columbus, O.; Secretary, L. B. Denning, Columbus, O.

Oklahoma Gas, Electric and Railway Association.—Annual meeting, Oklahoma City, May, ——1914. President, F. B. Bowman, Ada; Secretary-Treasurer, H. V. Boze, Oklahoma City.

Pacific Coast Gas Association.—Annual meeting, Long Beach, Cal., September ——— 1914 Officers: President, C. S Vance, Los Angeles, Cal.; Secretary-Treasurer, Henry B stwick, 445 Sutter street, San Francisco, Cal.

Pennsylvania Gas Association.—Annual meeting, Allentown, Pa., April ———, 1914; Officers, President, J. A. Frick, Allentown, Pa.; secretary-Treasurer, W. O. Lamson, Jr., West Chester, Pa.

Society of Gas Lighting.—Annual meeting Dec., 11, 1913: monthly meetings, second Thursday. Place, New York City. Officers: President, Fred. S. Benson; Secretary, George G. Ramsdell, 29 West 39th street, New York city.

Southern Gas Association.—Annual meeting, Mobile, Ala., April 4, 1914. Officers: President, James Ferrier, Rome, Ga.; Secretary-Treasurer, E. D. Brewer, Atlanta, Ga.

Southwestern Electrical and Gas Association.—Annual meeting, May 22, 23 and 24, 1914, Galveston, Tex. Officers: President, G. H. Gifford, Fort Worth Tex.; Secretary-Treas., J. D. Walker, Dallas, Tex.

Wisconsin Gas Association.—Annual meeting, May 20, 21, 22, 23, 1914, Milwaukee. Officers: President, Ewald Haase, Milwaukee, Wis.; Secretary-Treasurer, F. Harman, Milwaukee, Wis.

NOTICE

TO

EASTERN

GAS COMPANIES.

We are now almost ready to commence making deliveries from our branch factory in the East, from which transportation can be made by rail or water. Write us for prices on "Ferox," the intensified natural ferric oxide which is guaranteed in every particular. Efficient results without risks, moderate prices and low freight rates, will make our proposition appeal to you. Deliveries from stock after July 15th. Ready to mix—mixed with shavings—or delivered and mixed at your plant under our supervision.

CONSOLIDATED GAS PURIFICATION AND CHEMICAL CO.,

NASHVILLE, TENN. H. N. BRADLEY, President. 101 PARK AVE., NEW YORK.

A. S. B. LITTLE, General Manager. HERBERT SENGER, Gas Engineer.

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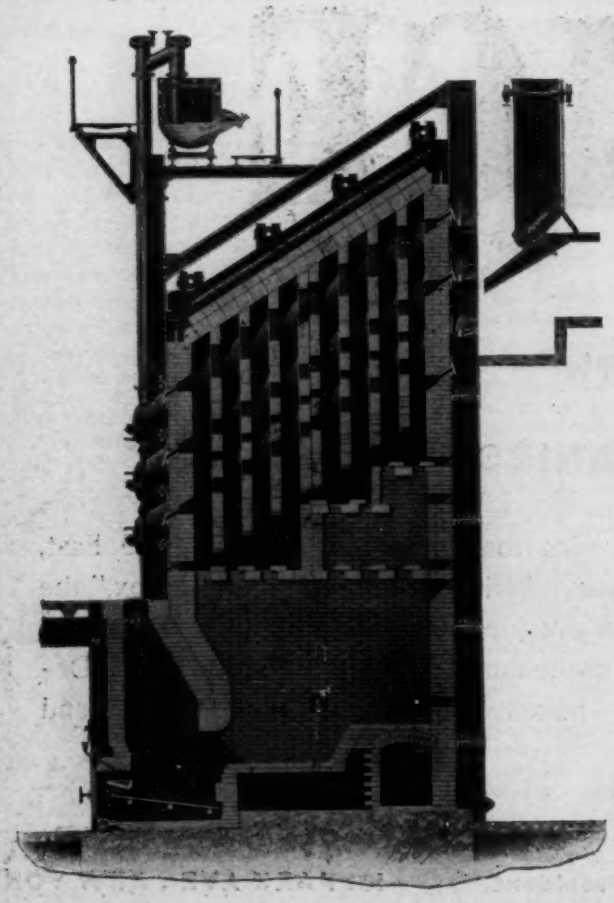

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GIVE THE HIGHEST EFFICIENCY FOR WORKS SENDING OUT THREE HUNDRED THOUSAND TO TWO MILLION CUBIC FEET OF GAS PER DAY.

LOW INSTALLATION COST, LOW OPERATION COST, LOW MAINTENANCE COST, HIGH YIELD OF GAS AND COKE, ECONOMY OF BENCH FUEL.

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More Gas with Less Fuel.

HIGHER HEATS WITH LONGER SERVICE.

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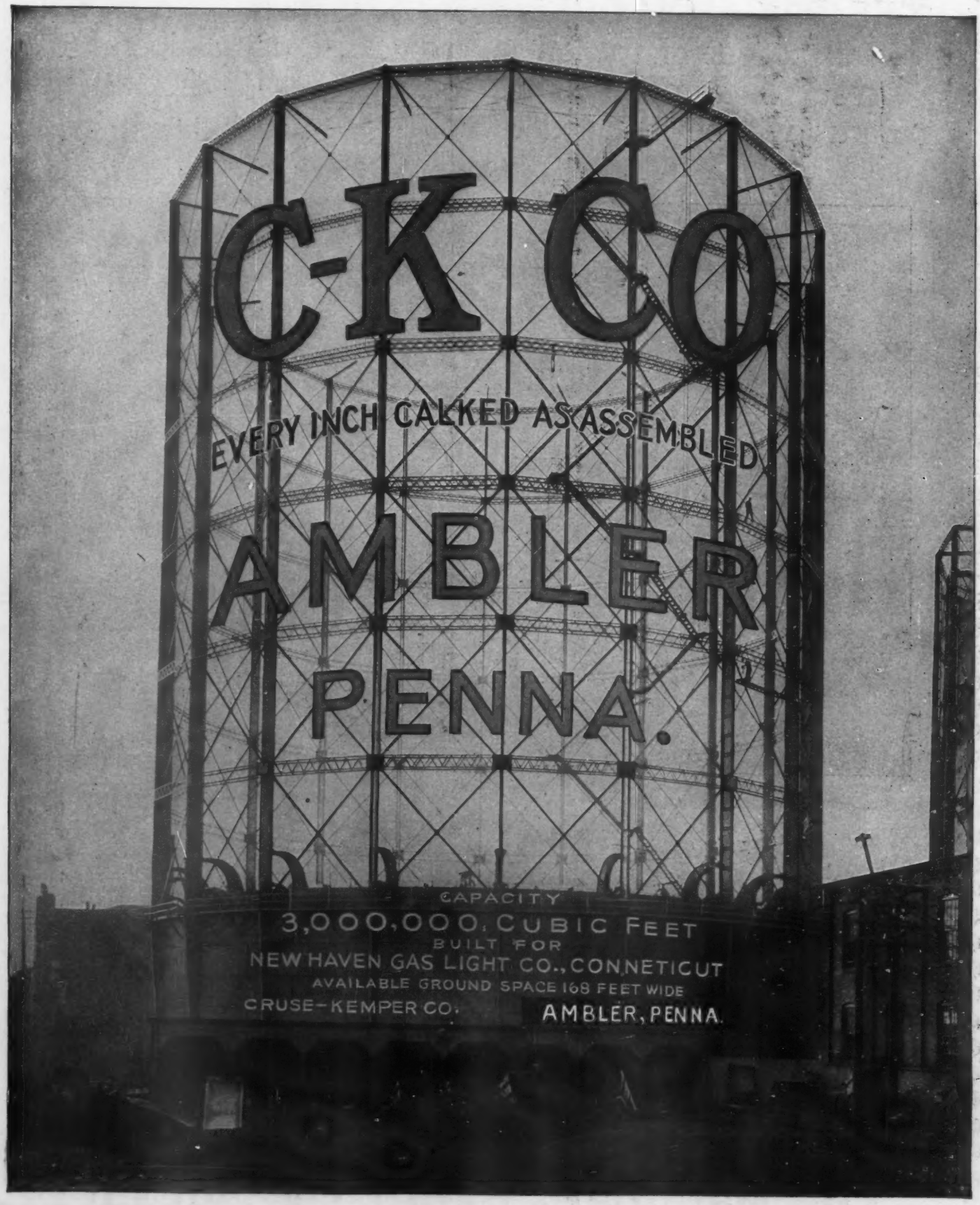
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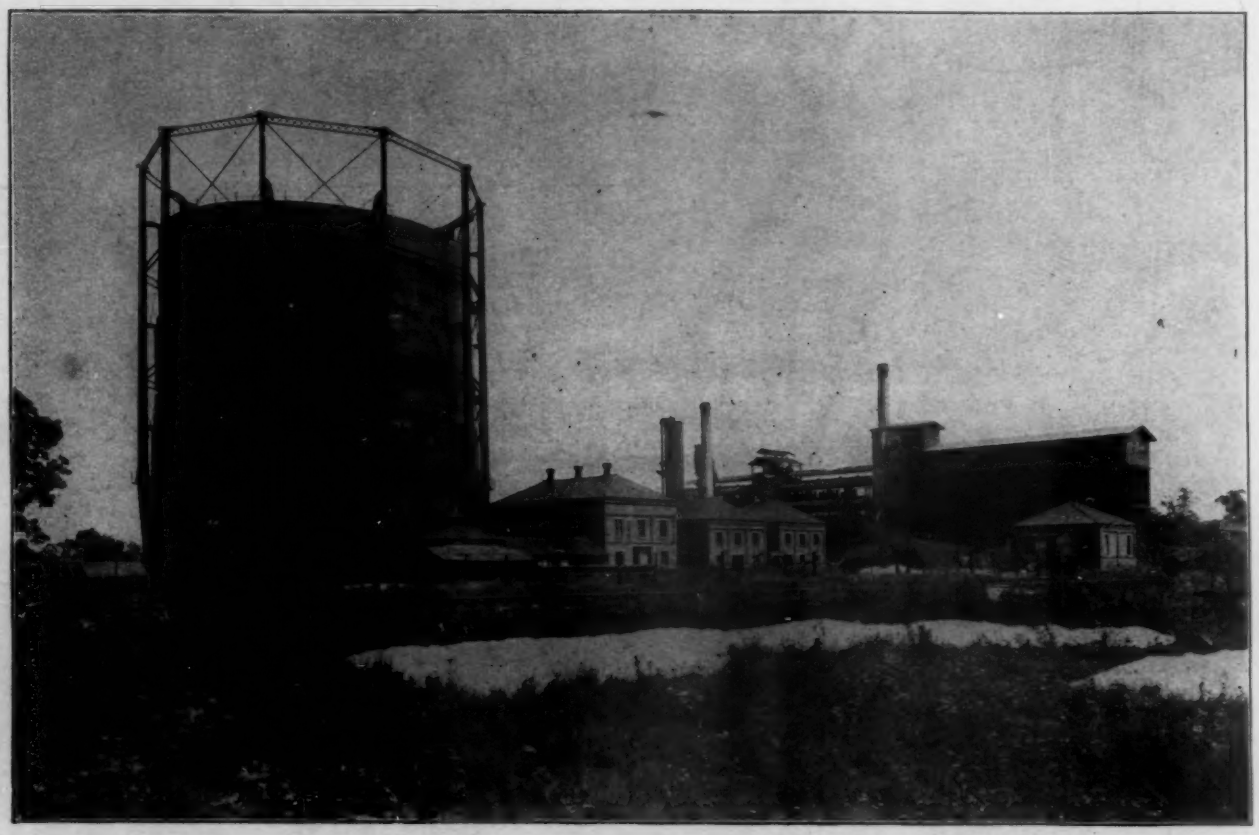

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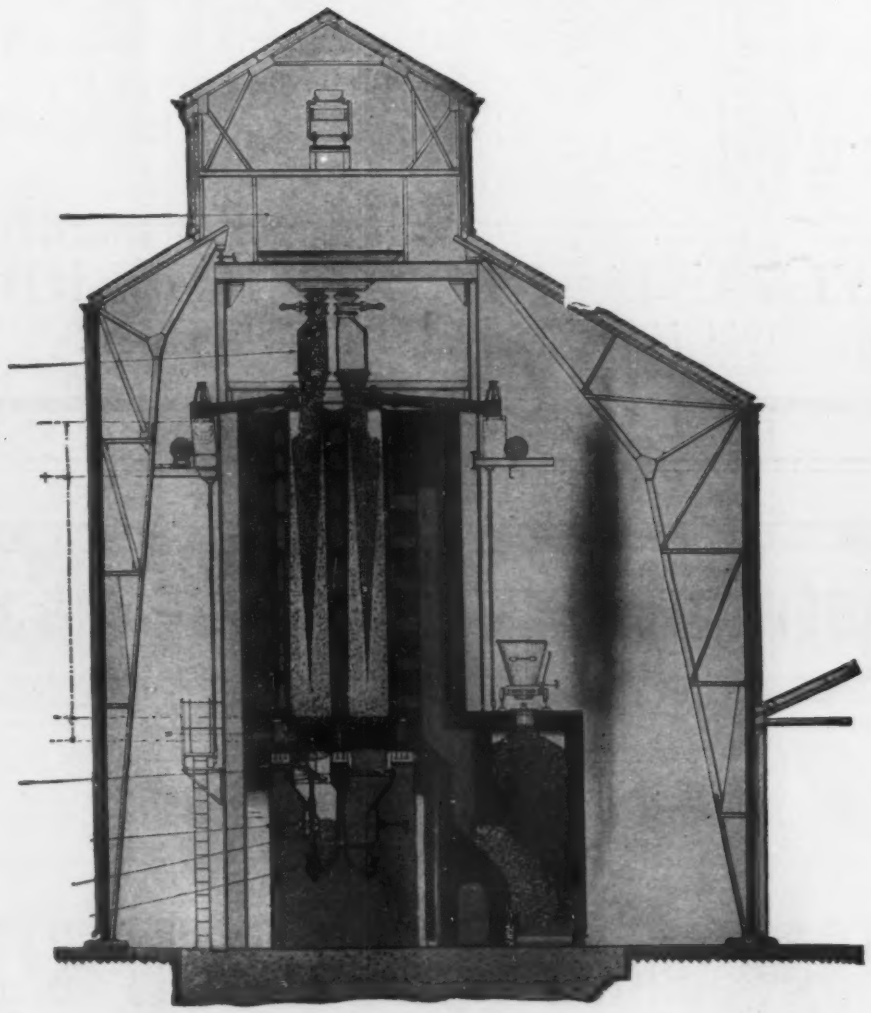

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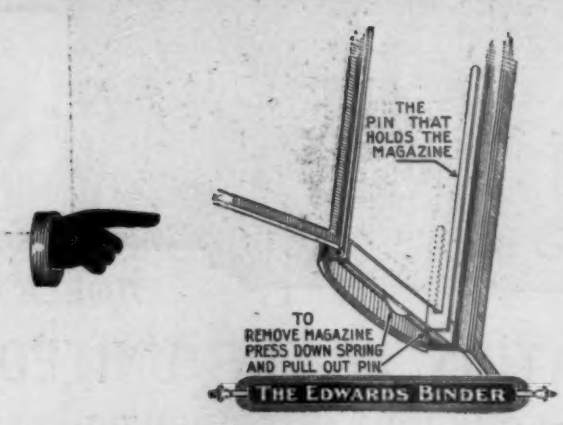

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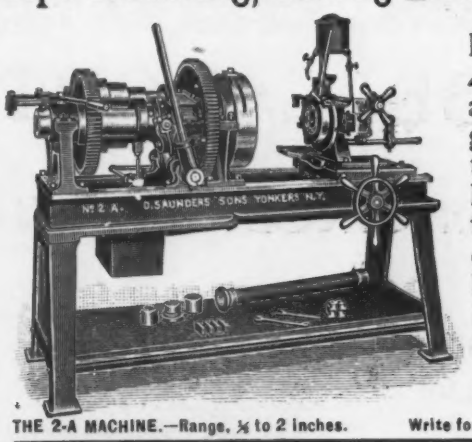

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COMMUNICATED BY THE AMERICAN METER COMPANY.

Day of Week.	MOONLIGHT SCHEDULE.		
	Date.	Light.	Extinguish.
Tuesday	1	8.00 P.M.	3.40 A.M.
Wednesday	2	8.00	3.40
Thursday	3	8.00 N.M.	3.40
Friday	4	8.00	3.40
Saturday	5	8.00	3.40
Sunday	6	8.00	3.40
Monday	7	8.00	3.40
Tuesday	8	9.40	3.40
Wednesday	9	10.00	3.40
Thursday	10	10.30 F.Q.	3.40
Friday	11	10.50	3.40
Saturday	12	11.20	3.40
Sunday	13	12.00	3.40
Monday	14	12.50 A.M.	3.40
Tuesday	15	1.40	3.40
Wednesday	16	No L.	No L.
Thursday	17	No L. F.M.	No L.
Friday	18	No L.	No L.
Saturday	19	8.00 P.M.	9.40 P.M.
Sunday	20	7.50	10.00
Monday	21	7.50	10.20
Tuesday	22	7.50	10.40
Wednesday	23	7.50	11.00
Thursday	24	7.50	11.20
Friday	25	7.50 L.Q.	11.40
Saturday	26	7.50	12 10 A.M.
Sunday	27	7.50	12.40
Monday	28	7.50	1.20
Tuesday	29	7.50	2.10
Wednesday	30	7.50	4.00
Thursday	31	7.50	4.00

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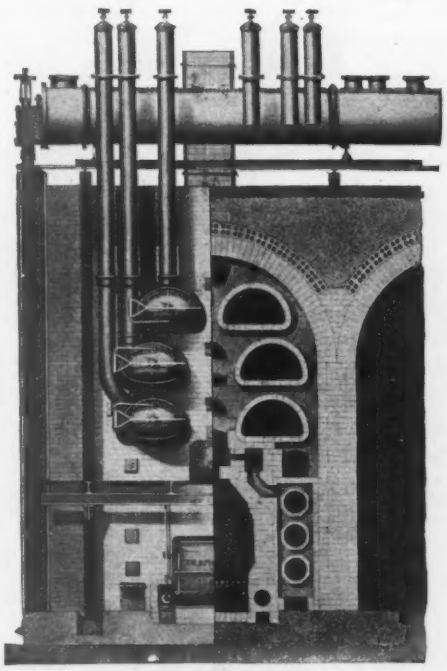

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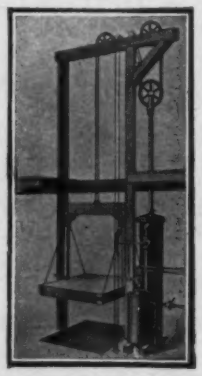
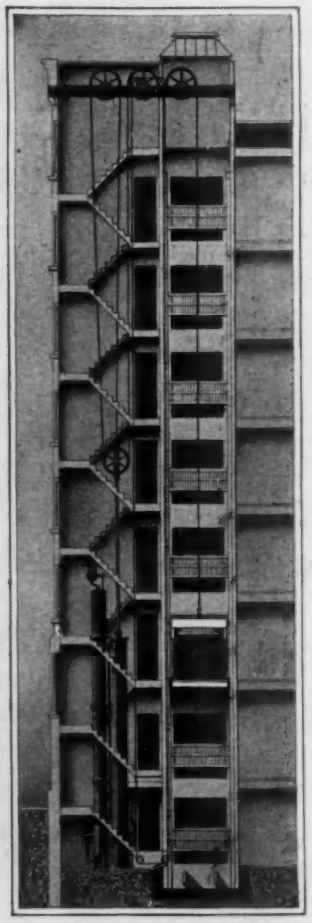
"Ridgway, I want you to go out and measure up those electric elevators, and tell me what it will cost to change them to Steam-Hydraulics. WE CAN'T STAND IT ANY LONGER."

Yes, indeedy, all but the DEAD ONES.

"HOOK 'ER TO THE BILER."

THE GAS MAN'S PET.





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ELEVATOR MAKERS TO FOLKS WHO KNOW.

The "Gas World" Analyses of Municipal Gas Accounts, FOR 1910-11.

AND

The "Gas World" Analyses of Gas Companies' Accounts, FOR 1909.

The former showing at a glance 69 accounts and the latter 55 accounts of Coal and Water Gas Companies, itemized.

Coal Carbonized, Gas Made and Sold, Yield of Residuals, Public Lamps, Mileage of Mains, Consumers, Price of Gas, Illuminating Power, Financial Results, Revenue. Manufacturing Charges, Rates and Taxes, Distribution Charges, Management Charges, Bad Debts, Capital Paid Up, Capital per Ton and per Thousand, Reserve Funds, etc.

Price, $4 each. For Sale by AMERICAN GAS LIGHT JOURNAL, 42 Pine Street New York City.

Coal Tar and Ammonia,

By GEORGE LUNGE, PH.D. Third and Enlarged Edition.
Price, $15. For Sale by
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Modern Machine Shop Construction, Equipment and Management, by OSCAR E. PERRIGO, M.E.

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Price, $1. *For Sale by*
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Gas Engineer's Pocket-book, —BY— HENRY O'CONNOR.

Comprising Tables, Notes and Memoranda relating to the Manufacture, Distribution and Use of Coal Gas, and the Construction of Gas Works. PRICE, $3.50. For Sale by
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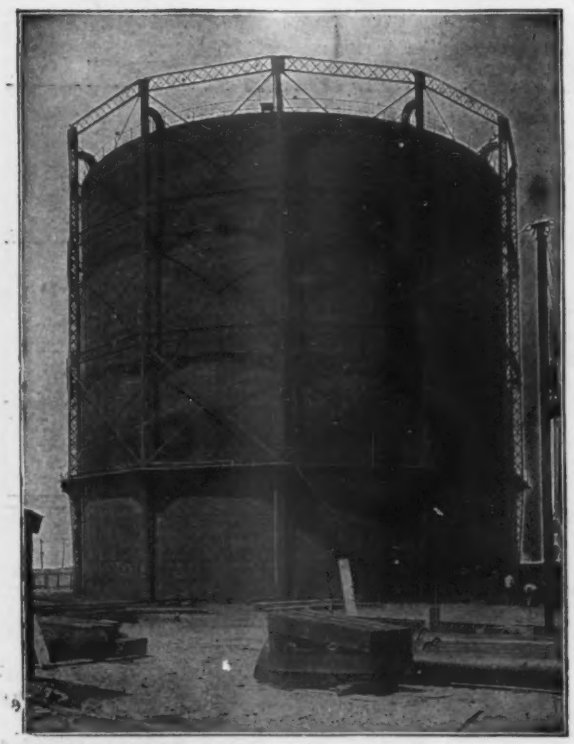

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With or Without Steel Tanks.

Oil Storage Tanks, Water Tanks, Etc.

ESTIMATES CHEERFULLY FURNISHED.

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BRICK ARE MADE EXCLUSIVELY FOR

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Adopted by many of the largest Gas Companies of United States, having proven, after exhaustive comparative tests, to be the most satisfactory and economical.

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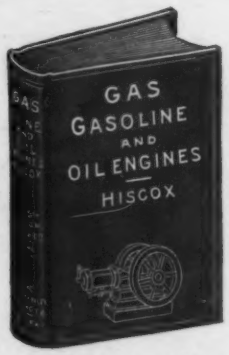
Proprietors of the MOUNT SAVAGE FIRE BRICK WORKS,

1113-1117 Fidelity Building, Baltimore, Md. Mount Savage, Md.



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The only complete American book on the subject for Gas Engine Owners, Gas Engineers and intending purchasers of gas engines, treating fully on the construction, installation, operation and maintenance of gas, gasoline, kerosene and crude petroleum engines.

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BROWN'S DIRECTORY OF GAS COMPANIES, 1913.

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FIELD'S ANALYSIS

For the Year 1912.

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400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF

Cast Iron Pipe.

HEAVY LOAM CASTINGS,

Dunham Specials,

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LAMP POSTS, VALVES, ETC.,

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Gasholders.

Single or Multiple Lifts, with or without Metal Tanks.

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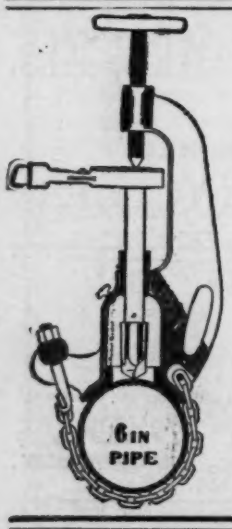

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Drilling and Tapping Pipe Under Pressure

WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

Size of Combination Drills and Taps, ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.

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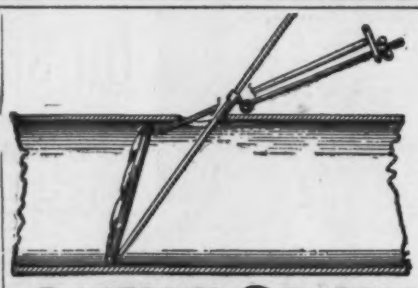

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The Half Minute

GAS MAIN SHUT-OFF

Manufactured and Sold by Safety Gas Main Stopper Co. 257-263 E. 133d St., New York.

AGENTS.

Pacific Coast—VAN E. BRITTON, 269 Monadnock Building, San Francisco, Cal.

Great Britain—PARKER & LESTER, Ormside Street, Old Kent Road, London, S. E.

IT IS ABSOLUTELY NECESSARY

that people be reminded continually that you are ready to sell them the things they want. This is a big world, with lots of people in it, and you are easily forgotten if you don't keep buyers posted. What you should do is to tell them about your product to-day, remind them to-morrow, and keep on reminding them thereafter. If you do this, when the buyer is ready to place his order he will remember you. :: :: :: :: :: :: :: :: :: ::

An Advertisement in the AMERICAN GAS LIGHT JOURNAL

is the best and surest means of keeping your name and product before the buyers. :: ::

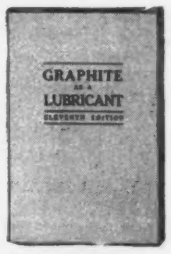
NORTHERN COAL-HANDLING PLANTS.

NORTHERN CRANES
NORTHERN ENGINEERING WORKS
DETROIT MICHIGAN — U.S.A.

This Book About

DIXON'S

GRAPHITE LUBRICANTS



Will show you how to cut your power losses and repair bills due to bearing friction. Write for it, asking for No. 231.

Joseph Dixon Crucible Co.

Jersey City Established 1827 New Jersey

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UNIVERSAL PIPE is as universal in its application as it is unvarying in its performance.

The pipe is strong and trustworthy in all circumstances, and the Universal Joint makes its use possible under conditions prohibitive to the ordinary type of joint.

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Gas Analyst's Manual,

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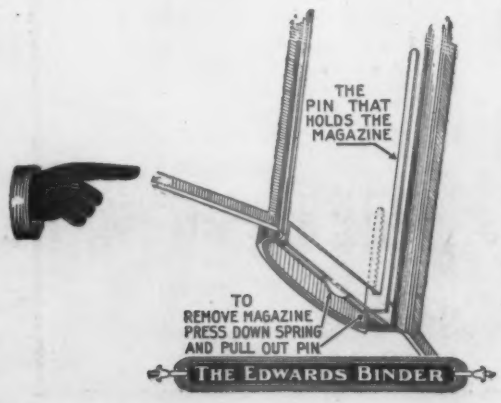

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ONE OF TWO TEN MILLION (10,000,000) CUBIC FEET CAPACITY

GAS HOLDERS

BUILT BY

THE BARTLETT HAYWARD CO

BALTIMORE NEW YORK

FINANCIAL NOTICES.

DIVIDEND NOTICE.

AMERICAN LIGHT AND TRACTION CO., 40 WALL STREET, NEW YORK CITY, July 1, 1913.

The Board of Directors this day declared from the net earnings of the Company a regular quarterly dividend of one and one half per cent. (1½ per cent.) on the preferred stock of this Company, payable Aug. 1, 1913, to stockholders of record of preferred stock at the close of business July 16, 1913. The Board also declared, from the undivided profits of the Company, a quarterly dividend of two and one-half per cent. (2½ per cent.) on the common stock of the Company, payable Aug. 1, 1913, to stockholders of record of Common Stock at the close of business July 16, 1913. The Board also declared, from the undivided profits of the Company, a dividend of two and one-half (2½) shares of common stock on every one hundred (100) shares of common stock outstanding, payable Aug. 1, 1913, to stockholders record of common stock at the close of business July 6, 1913. The transfer books for both preferred and common stock will close July 16, 1913, at 3 o'clock P.M., and will reopen Aug. 1, 1913, at 10 o'clock A.M.

1988-1 C. N. JELLIFFE, Secretary.

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, June 11, 1913.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable July 15, 1913, to stockholders of record at the close of business, June 30 1913. Checks will be mailed.

1984-5 LEWIS LILLIE, Treasurer.

POSITIONS WANTED.

$7,500 GAS MAN

will be at liberty from August 1st, and wishes service with a syndicate, bond house or company.

Address, "COMBINATION,"

1983-3 Care this Journal.

As MANAGER of a gas property, large enough to pay a salary of $4,000 per annum, or would accept a smaller guarantee, supplemented by a percentage of certain savings that might be effected through efficient operation. I am 36 years of age and have had actual and practical experience in design, construction and operation of both coal and water gas plants, together with high and low pressure distribution systems.

Address, "MANAGER,"

1957-3 Care this Journal.

As NEW BUSINESS MANAGER in growing Middle-Western city, by man thoroughly experienced in all lines of gas appliances.

Address, "COMPETENT,"

1988 1 Care this Journal.

GENERAL SUPERINTENDENT desires change of base; anywhere at proper terms. Water gas, about two million daily preferred. Eight years U. G. I. distribution; four years other plants.

Address, "YOUNG MAN,"

1988-2 Care this Journal.

POSITIONS OPEN.

Wanted a SUPERINTENDENT of gas works situated in New England, thoroughly competent to manufacture and distribute. Must be well informed on coal and water gas manufacture, married and not under 35 years of age. New works are about to be built; large territory to be served. Only reliable, first class men need apply.

Address, "WORKS SUPT.,"

1987-2 Care this Journal.

Wanted, first-class METER REPAIR MAN. Must be thoroughly competent in every detail. Apply to THE OTTAWA GAS CO., Canada, stating experience and salary expected.

1986-5

OPERATING ENGINEER wanted—gas, electricity, hot water. Middle-West. City 25,000 to 50,000 population. State experience and salary expected.

Address, "OPERATING ENGINEER,"

1983-1 Care this Journal.

SUPERINTENDENT wanted for gas property in city of 25,000 inhabitants. Must be thoroughly experienced in operation and maintenance of water gas apparatus and competent also to take charge of new business and complaint department. Must be a theoretical as well as practical gas man. State previous experience, salary expected, and give reference.

1983 2 Address, "BOX 7," care this Journal.

Wanted, WATER GAS MAKER of experience. Married and good habits. Town in Iowa of 5,000 population.

Address, with reference,

1983-3 "X.," care this Journal.

MISCELLANEOUS.

FOR SALE.

Anyone seeking an active investment, in a fully equipped factory putting out in thousands

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used in every home where gas or electric currents are available, should communicate with the advertiser. Reason for wishing to sell, the pressing need for close personal attention to another business. Will retain 49 per cent. of the capital stock if desired.

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FOR SALE,

One Set of "King's Treatise on Coal Gas." Three volumes. Edition 1882. Price, $100.

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Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 130 in use. Write to

STROH & OSIUS, Patentees, or

MICHIGAN AMMONIA WORKS, - Detroit, Mich.

The Light, Heat & Power Corporat'n

CONTRACTING ENGINEER

Electric Light and High Pressure Gas Plants.

Equipment, Material and Supplies.

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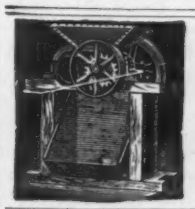
High Grade Firebrick, Blocks, Tiles,

ETC.,

Works: Maurer, N. J. Office: 420 E. 23d St., N. Y. City.



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Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER,

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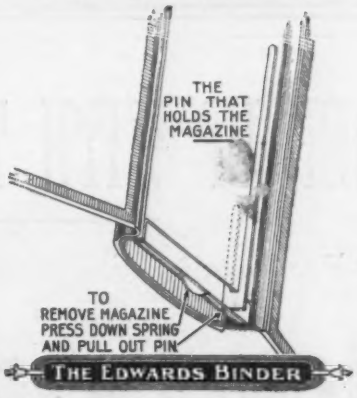

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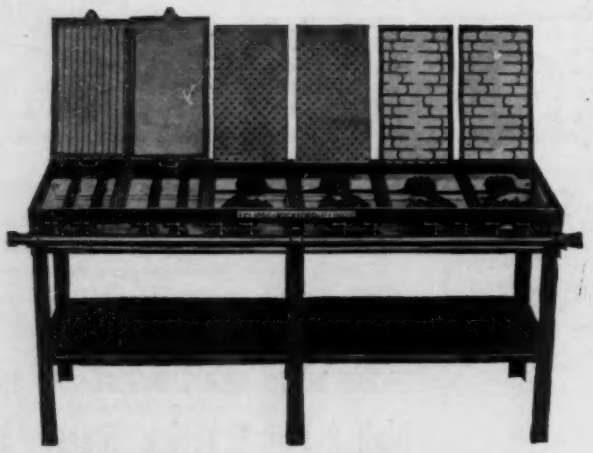
Intensive Washer

will quickly save its cost by stopping tar from reaching and spoiling the oxide. Helps remove both ammonia and sulphur.



RAISE YOUR SALES RECORD

¶ Here is another stove which will help you to break in, or get more of the Hotel business.

¶ This is the stove the larger places need for their early breakfast and the in-between orders, when their larger equipment is not in commission.

¶ The smaller places also have use for a stove of this kind. It is the ideal equipment for the quick lunch restaurant, and just the stove which has long been needed for the lunch wagon.

¶ Surely you yourself can see the wonderful possibilities for a stove of this kind; you can appreciate the great variety of uses it might be put to.

¶ Study this stove; note the grate and burner equipment. Two open grates for quick cooking, two for the slower cooking, a solid plate for cake baking and one for broiling. The open and perforated grates are heated by a giant and a single burner each. The solid plates by two pipe burners each.

¶ As we illustrate the stove here, we show it with the high frame and in the six section size. We can furnish it with a low (11 inch) frame, and in sizes of 2---3---4---8 and 10 sections.

¶ The burner and top plate equipment can be changed to meet any requirement. We can if desired supply this stove with one or two 22 inch ovens.

¶ Automatic lighter can be furnished for top burners.

¶ Take the trouble to look up pages 65---66---68 and 69 in our catalogue. Note please the remarkably low price we make on this stove. This will enable you to make a correspondingly low price, and as the outfit is so very useful, your customer will find it almost difficult to refuse you an order for one.

ECLIPSE GAS STOVE CO.

ROCKFORD, ILL.

KEEP UP WITH THE TIMES.

Progressive Engineers are Using

Ulco Lead Wool

For calking cast iron pipe joints.

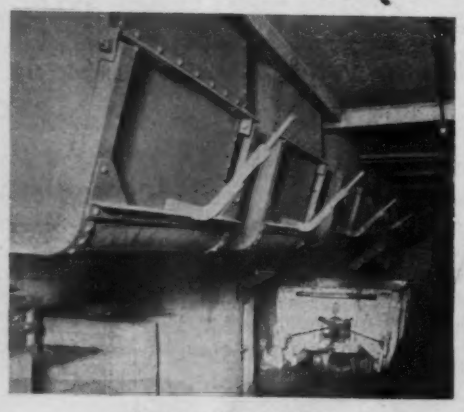
Test it and be convinced.

Samples and information yours for the asking.

UNITED LEAD CO.

111 BROADWAY, NEW YORK.

Offices in all Principal Cities.



McDONALD-MANN QUENCHING CHUTES WILL

(1) Prevent leakage of air into the chutes.
(2) Prevent leakage of steam and noxious gases outward.
(3) Reduce the losses from incipient combustion.
(4) Produce a better grade of coke.
(5) Use less water for quenching.
(6) Retort house free from steam and hot coke.

You will want to know about the other advantages they are described in Bulletin 092. Ask for a copy.

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Designers and Manufacturers of Apparatus for the Automatic Handling of Bulk Material.

30

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BRADFORD, PENNA., U. S. A.

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The Dresser All-Steel Long Sleeves Style 40.

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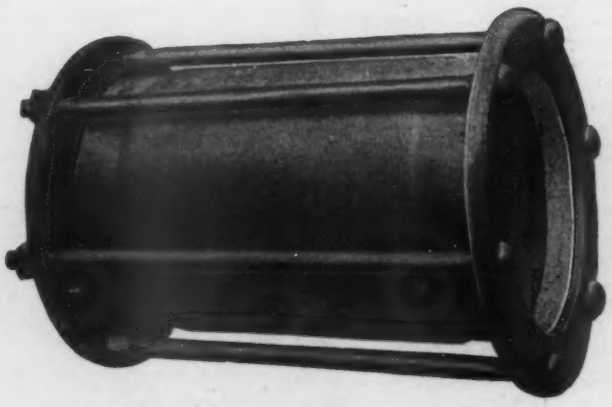

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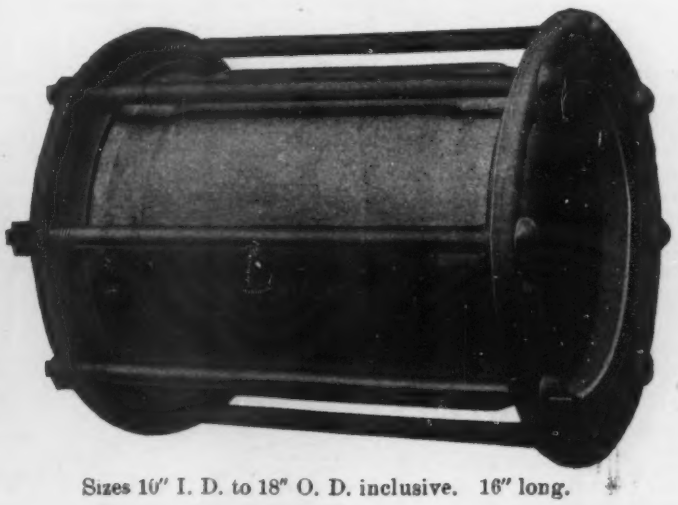

Sizes 10" I. D. to 18" O. D. inclusive. 16" long.

Dresser Stands for Quality, Workmanship and Finish.

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Michigan Ammonia Works.
Western Gas Construction Co.

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Conveyors,
Stoking Machinery,
Water Gas Plants.

Arc Lamps.
See Lamps.

Bags—Gas.
American Meter Co.
New York Rubber Co.
See also Stoppers.

Benches—Complete.
Didier-March Co.
Evens & Howard Firebrick Co.
Gardner, Jr., Co., James.
Gas Machinery Co.
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Benzol.
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Blast Furnaces.
American Gas Furnace Co.

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American Gas Furnace Co.
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Burners. See Lamps.

By-Product Plants.
National Chamber Oven Co.

Calking Tools.
New York Lead Wool Co.
United Lead Co.

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American Meter Co.
Improved Equipment Co.

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Isbell-Porter Co.
Stacey Mfg. Co.

Coals.
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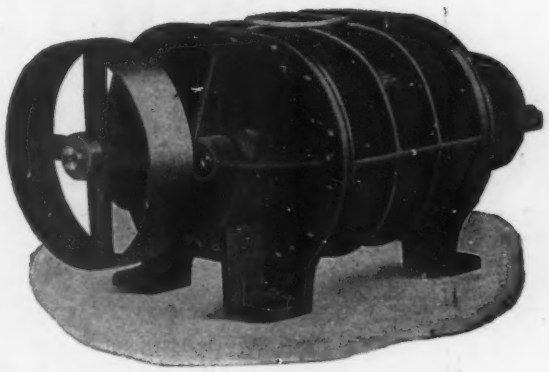

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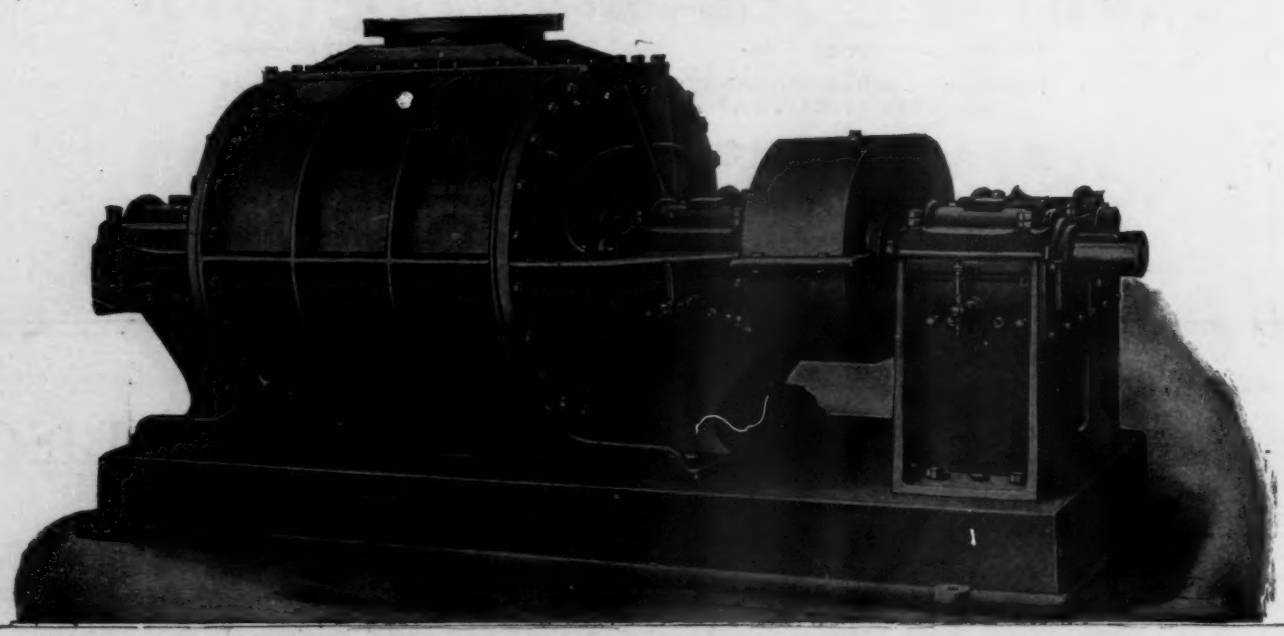

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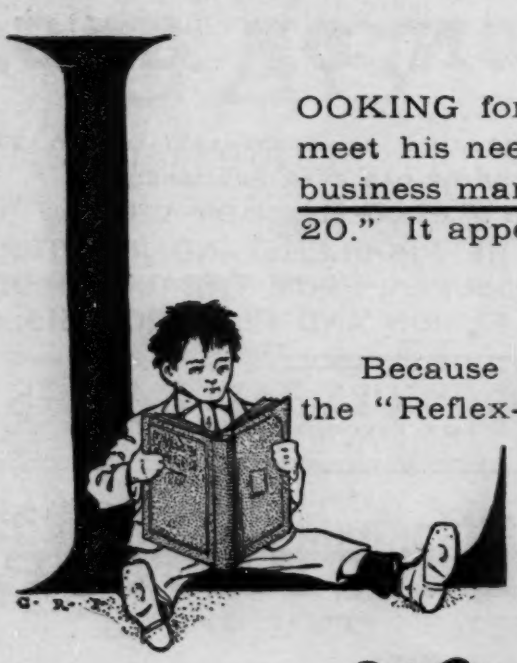

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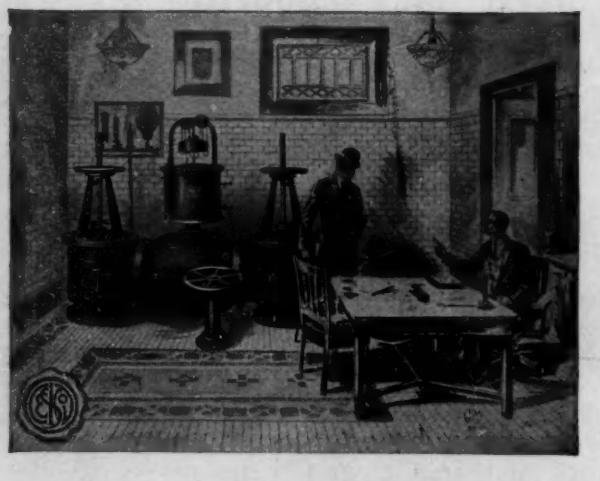

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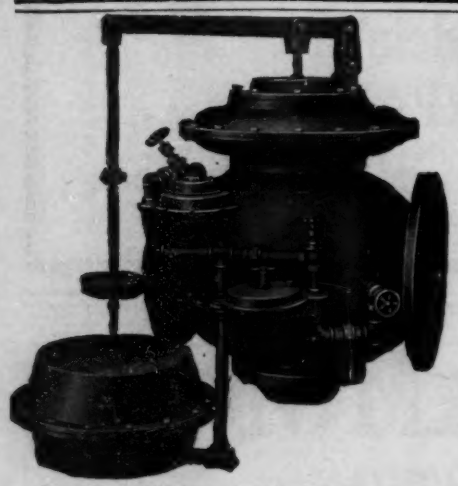

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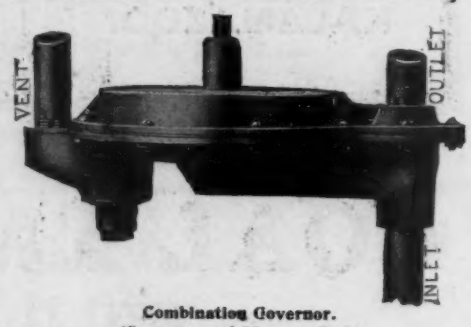

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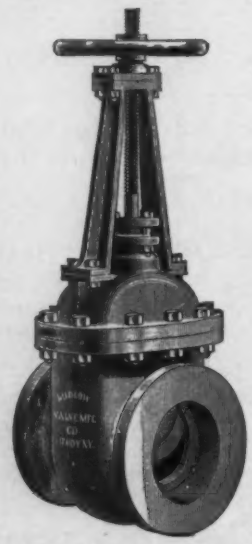

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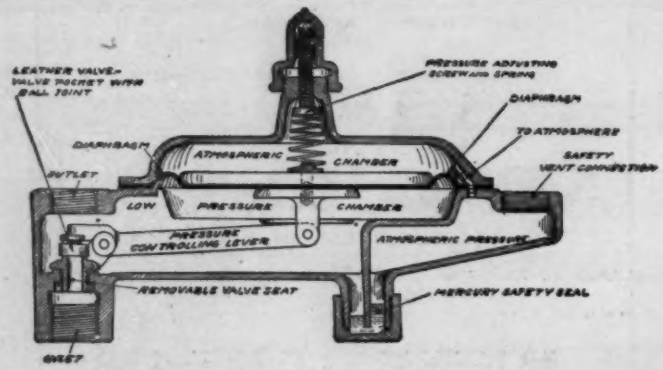

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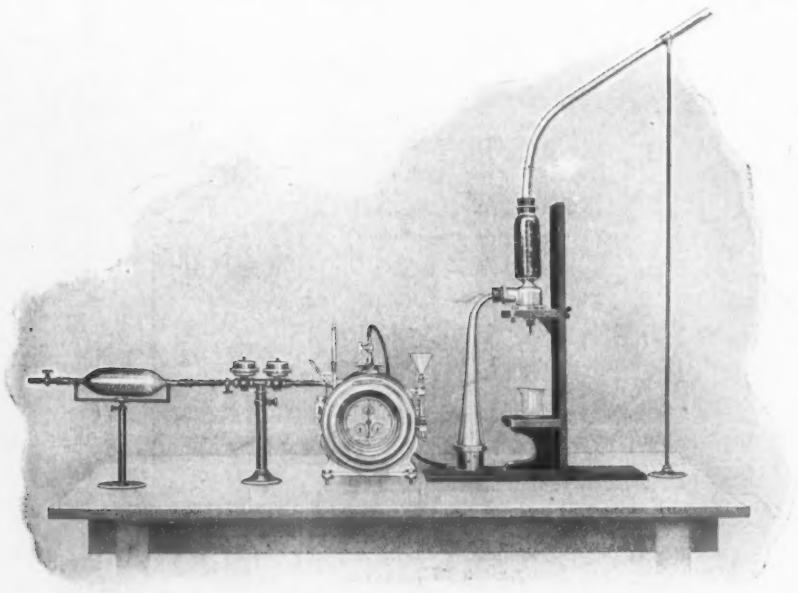

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